

**THE GEORGE WASHINGTON UNIVERSITY BULLETIN**

**COURSES OF INSTRUCTION 1965-1966**

**For the Division of University Students and Continuing Degree Candidates**



APRIL 1965

COVER: A "paper relief" by Carrie Crosson, an art student at The George Washington University, 1965.

THE GEORGE WASHINGTON UNIVERSITY BULLETIN  
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Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Director of Admissions, The George Washington University, Washington, D. C. 20057. Information concerning courses of instruction, programs, and facilities of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on page 109.

## COURSES OF INSTRUCTION

1965-1966

For the Division of University Students  
and Continuing Degree Candidates

## CORRESPONDENCE DIRECTORY

Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Director of Admissions, The George Washington University, Washington, D. C. 20006.

Information concerning courses of instruction, programs, and faculties of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on page 209.

<i>General Admission</i>	Director of Admissions, Building C
<i>Law School Admission</i>	Dean of The Law School
<i>School of Medicine Admission</i>	1339 H Street NW.
<i>Aerospace Studies (AFROTC)</i>	Director of the Division of Aerospace Studies, Chapin Hall
<i>Alumni Association</i>	Alumni Office, Bacon Hall
<i>Medical Alumni Association</i>	1335 H Street NW.
<i>Foreign Students</i>	Director of Foreign Student Affairs, Building T
<i>Men's housing</i>	Dean of Men
<i>Women's housing</i>	Dean of Women
<i>Fellowships, Scholarships, and Loans</i>	Director, Student Financial Aid
<i>Student Employment</i>	Student Placement Office, 2114 G Street NW.
<i>Summer Sessions</i>	Dean of The Summer Sessions
<i>Transcripts of Records</i>	Registrar, Building C
<i>Veterans Education</i>	Director of Veterans Education

### GRADUATE STUDY:

<i>Master's degrees in Arts and Sciences</i>	Dean of Columbian College of Arts and Sciences
<i>Doctor of Philosophy</i>	Dean of The Graduate Council
<i>In Education</i>	Dean of The School of Education
<i>In Engineering or Applied Science</i>	Dean of The School of Engineering and Applied Science
<i>In Law</i>	Dean of The Graduate School of Public Law
<i>In Accounting, Business Administration, Business and Economic Statistics, Economic Policy, Health Care Administration, International Affairs, Personnel Administration, Public Administration, Public Affairs</i>	Dean of The School of Government, Business, and International Affairs



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SEPTEMBER						
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NOVEMBER						
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Spring Semester 1966

JANUARY						
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Summer Semester 1966

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## CALENDAR FOR 1965-1966

### 1965 FALL SEMESTER

- September 13-14* Placement tests *Monday-Tuesday*  
*September 16-18* Registration: *Thursday-Friday* from 12:00 to 8:00 p.m.;  
*Saturday* from 10:00 a.m. to 1:00 p.m.  
*September 20* Classes begin *Monday*  
*November 11* Veterans Day (holiday) *Thursday*  
*November 25-27* Thanksgiving recess *Thursday-Saturday*  
*December 20-January 1* Christmas recess *Monday-Saturday*  
*January 3* Classes resume *Monday*  
*January 12* Last day of fall-semester classes *Wednesday*  
*January 15-22* Examination period *Saturday-Saturday*

### 1966 SPRING SEMESTER

- January 24* Placement tests *Monday*  
*January 27-29* Registration: *Thursday-Friday* from 12:00 to 8:00 p.m.;  
*Saturday* from 10:00 a.m. to 1:00 p.m.  
*January 31* Spring-semester classes begin *Monday*  
*February 21* Winter Convocation *Monday*  
*February 22* George Washington's Birthday (holiday) *Tuesday*  
*April 4-11* Spring recess *Monday-Monday*  
*April 12* Classes resume *Tuesday*  
*May 18* Last day of spring-semester classes *Wednesday*  
*May 21-27* Examination period *Saturday-Friday*  
*May 30* Memorial Day (holiday) *Monday*

### 1966 SUMMER SESSIONS\*

Registration for fall semester of academic year 1966-67,  
Thursday through Saturday morning, September 15-17

\* Dates will be announced in the Calendar of the 1966 Summer Sessions Catalogue published in December 1965.

THIS CATALOGUE CONTAINS INFORMATION on the Division of University Students. In this Division are registered students who wish to take University courses for credit or as auditors but are not pursuing degree programs. The courses listed in this Catalogue are open to nondegree students as well as to continuing degree candidates in Columbian College of Arts and Sciences; the Graduate Council; the School of Engineering and Applied Science; the School of Education; and the School of Government, Business, and International Affairs.

For information concerning the University's degree programs in the Arts and Sciences, Education, Government and Business, or International Affairs request the Undergraduate and Graduate Catalogue; in Engineering and Applied Science, Law, and Medicine, request the catalogue for the individual school. See "Annual Issues of the University Bulletin" page 209.



## THE UNIVERSITY

### HISTORY AND ORGANIZATION

THE GEORGE WASHINGTON UNIVERSITY had its beginning in 1821 as The Columbian College in the District of Columbia. The name of the institution was changed in 1873 to Columbian University and in 1904 to The George Washington University. The debt of the University to George Washington whose name it bears is an intangible one.

George Washington, as President and as private citizen, had urgently insisted upon the establishment of a National University in the Federal City. There he hoped that, while being instructed in the arts and sciences, students from all parts of the country would acquire the habits of good citizenship, throwing off local prejudices and gaining at first hand a knowledge of the practice, as well as the theory, of republican government. To further the materialization of his hopes, Washington left a bequest of fifty shares of The Potomac Company "towards the endowment of a University to be established within the limits of the District of Columbia, under the auspices of the General Government, if that government should incline to extend a fostering hand towards it." The Congress never extended "a fostering hand." The Potomac Company passed out of existence, and Washington's bequest became worthless.

Fully conscious of Washington's hopes, but motivated primarily by a great missionary urge and the need for a learned clergy, a group of dedicated ministers and laymen sponsored a movement for the establishment of a college in the District of Columbia. Inspired largely by the zeal and energy of the Reverend Luther Rice, they raised funds for the purchase of a site and petitioned Congress for a charter. After much delay and amendment, Congress granted a charter which was



approved by President Monroe on February 9, 1821. To safeguard the College's nonsectarian character it provided "That persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College, or denied any of the privileges, immunities, or advantages therefore, for or on account of his sentiments in matters of religion."

During the entire time when the institution was known as Columbian College, its activities were centered on College Hill, a tract of forty-six and a half acres between the present Fourteenth and Fifteenth Streets extending north from Florida Avenue to somewhat beyond Columbia Road. The Medical School was located downtown. For the better part of the Columbian University period, the buildings of the University were situated along H Street between Thirteenth and Fifteenth Streets. The Medical School group still remains there.

During the last half century the University's present plant has been developed in that section of the old First Ward familiarly known as "Foggy Bottom," between Nineteenth and Twenty-fourth Streets, south of Pennsylvania Avenue. Within a few squares are the White House, the Department of the Interior, the State Department, the World Bank, and many other governmental offices and international agencies. The area is not without its reminders of historic interest to the University. President Monroe who signed the Charter lived at 2017 Eye Street. The first President of the Board of Trustees, the Reverend Obadiah B. Brown, was for fifty years the pastor of a church at Nineteenth and Eye Streets, and Washington selected Twenty-third and E Streets as the site of the National University he had hoped to see established.

The University as it is now organized consists of Columbian College of Arts and Sciences, which offers work leading to Associate's, Bachelor's, and Master's degrees; the Graduate Council, which offers work leading to the degree of Doctor of Philosophy; the professional schools, which include Medicine; Law; Engineering and Applied Science; Education; and Government, Business, and International Affairs; the College of General Studies; the Division of University Students; the Division of Aerospace Studies; and the Summer Sessions.

The George Washington University is privately endowed and is governed by a self-perpetuating Board of Trustees of which the president is an ex officio member.

#### ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This fact is important to students who wish to transfer credits from one institution to another. The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board. The Department of Chemistry is on the approved list of the American Chemical Society.

#### THE LIBRARY

The Library collections of the University are housed in the University Library and in the departmental libraries of law and medicine.

These collections contain approximately 402,400 volumes—305,000



in the University Library, 67,400 in the Law Library, and 30,000 in the Medical Library. Approximately 10,000 volumes a year are added to the Library's resources. Endowments, supplementing the University appropriation, provide books in the fields of American civilization, American literature, foreign service, history, public finance, and the social sciences; and gifts from many sources have enriched the collections. The Libraries currently receive 3,000 periodicals.

The hours of the University Library and the Law Library are Monday through Friday, 9:00 a.m. to 10:00 p.m.; Saturday, 9:00 a.m. to 5:00 p.m.; Sunday, 2:00 to 10:00 p.m. The Medical Library is open Monday through Friday, 9:00 a.m. to 10:00 p.m.; Saturday, 9:00 a.m. to 5:00 p.m.

#### THE BOARD OF TRUSTEES 1964-65

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Benjamin Mosby McKelway, Litt.D., *Vice Chairman*

Edward Karrick Morris, LL.D., *Secretary*

Godfrey Leon Munter, A.B., LL.B., LL.D., *Assistant Secretary*

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Wiley Thomas Buchanan, Jr., LL.D.

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Miss Jacqueline Cochran, D.H.L., LL.D., Sc.D.

Oswald Symister Colclough, B.S., LL.B., LL.D., Sc.D.,

*Acting President of the University, ex officio*

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R. Roy Dunn

Robert Vedder Fleming, LL.D., *Chairman Emeritus*

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John Edgar Hoover, LL.M., LL.D.

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Alfred Henry Lawson, LL.B., LL.D.

Franklin Jerome Lunding, LL.B., LL.D.

John Keown McKee

James Matlack Mitchell, A.M.

Charles Emory Phillips, LL.B., LL.M.

Nelson Paul Poynter, A.M., Litt.D.

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Carleton D. Smith

Sidney William Souers, A.B., LL.D.

Lewis L. Strauss, Sc.D., LL.D., L.H.D.

L. Corrin Strong, Ph.B., LL.D.

\* James Cornelius Van Story, Jr., A.M.

\* Frank Harvey Weitzel, A.B., LL.B.

James Russell Wiggins, LL.D.

\* John Johnston Wilson, LL.B.

Watson W. Wise, Ph.B.

\* James Otis Wright, B.S., LL.B.

\* Nominated by the alumni.

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Ulysses S. Grant, 3d, B.S., Graduate United States Engineers School,  
LL.D., Sc.D.  
Gilbert Grosvenor, A.M., LL.D., Litt.D., Sc.D.  
Alexander Wetmore, Ph.D., Sc.D.  
Charles Stanley White, M.D., Sc.D.  
Lloyd Bennett Wilson

#### OFFICERS OF ADMINISTRATION \*

##### THE UNIVERSITY

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John Anthony Brown, Jr., A.M., L.H.D., LL.D., *Vice President and Dean of Faculties*  
Henry William Herzog, B.S., *Vice President and Treasurer*

##### OFFICE OF THE PRESIDENT

William Parkhurst Smith, Jr., A.B., M.B.A., *Executive Assistant to the President*

##### OFFICE OF THE VICE PRESIDENT AND DEAN OF FACULTIES

Harold Frederick Bright, Ph.D., *Associate Dean of Faculties*  
Claud Max Farrington, A.M., *Director of Special Projects*  
Sally Oleon Shames, Ph.D., *Assistant to the Vice President and Dean of Faculties*  
Tamis Wilson Borden, A.B., *Administrative Secretary*

##### OFFICE OF THE VICE PRESIDENT AND TREASURER

William David Johnson, B.S., *Comptroller*  
Humbert John Cantini, Jr., LL.B., *Assistant Treasurer*  
Margaret Payne Greene, B.S., *Assistant Treasurer, Contract Research*  
Maurice Kingsley Heartfield, Jr., A.B. *Assistant Treasurer; Director, Student Financial Aid*  
John Collum Einbinder, A.B. in Govt., *Business Manager*

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Blaine Richard Berg, M.S., *Director of Public Relations*  
Paul Vernon Bissell, Ph.D., *Dean of Men; Director of Veterans Education*

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\* The President of the University, the Dean of Faculties, the Registrar of the University, and the Director of Admissions of the University are ex officio members of all faculties of the colleges, schools, and divisions of the University.  
Officers of Administration for the year 1964-65.



Richard Bernard Castell, A.B., M.D., *Director of Health Services*  
Charles William Cole, Ph.D., *Dean of the Summer Sessions*  
Robert Faris, B.S., *Director of Men's Athletics*  
Warren Gould, A.M., *Assistant Vice President—Resources*  
Frederick Russell Houser, A.M. in Govt., *Registrar*  
Elmer Louis Kayser, Ph.D., LL.D., *University Historian*  
Virginia Randolph Kirkbride, A.M., Ed.D., *Dean of Women*  
John Francis Latimer, Ph.D., Litt.D., *Director of Foreign Student Affairs; University Marshal*  
John Russell Mason, A.M., M.S. in L.S., *Librarian; Curator of Art*  
Joseph Young Ruth, A.B., *Director of Admissions*  
Joseph Richard Sizoo, A.M., D.D., Litt.D., LL.D., L.H.D., S.T.D.,  
*Director of University Chapel*  
Loretta May Stallings, A.M., *Director of Women's Athletics*  
Stanley Tracy, LL.B., *Director of Alumni Relations*  
Benjamin Douglass Van Evera, Ph.D., Sc.D., *Dean for Sponsored Research*  
Wallace Edward Weems, Jr., A.B., *Director of Personnel Services*

#### DIVISION OF UNIVERSITY STUDENTS

John Gage Allee, Jr., Ph.D., *Dean of the Division of University Students*  
Elizabeth Truman Wright, A.M., *Assistant Dean of the Division of University Students*  
Robert Lee Williams, A.M., Ed.D., *Acting Assistant Dean of the Division of University Students*

## THE DIVISION OF UNIVERSITY STUDENTS

*Dean J. G. Allee, Jr.*

*Assistant Dean Elizabeth Wright\**

*Acting Assistant Dean, R. L. Williams*

### The Dean's Council†

J. G. Boswell, I. B. Hansen, Hewitt Kenyon

### INTRODUCTION

THE DIVISION OF UNIVERSITY STUDENTS was established in 1930 to make the regular course offerings of the University more generally available to members of this metropolitan community and others, not at the time candidates for degrees in this University. In this Division are registered students who wish to undertake university courses for credit or as auditors. University students may be employed in government or industry, taking courses to increase their vocational fitness or to inform them on new developments in the arts and sciences. They may be taking courses as a matter of personal interest for cultural enrichment. Such students may be candidates for higher degrees in other institutions, sent here for special work as part of a graduate program. They may be undergraduates, matriculated in other colleges, taking summer sessions courses only or courses for transfer during the regular academic year with the approval of their own institution. To serve members of such groups and others, not enrolled in degree-granting branches of the University, is the function of the Division of University Students.

The privilege of attending The George Washington University as a nondegree student is granted on the basis of maturity and proper preparation. Because no degree at The George Washington University is involved, there can be no meaningful advisory system in the Division. However, students are invited to seek advice from academic departments. University Students are urged to apply to the Director of Admissions for transfer to degree-granting branches whenever such action is appropriate.

\* On sabbatical leave fall semester 1965-66.

† The Dean of Faculties, the Dean and the Assistant Dean of the Division are ex officio members of the Council.



## Admission

THE UNIVERSITY ACCEPTS BOTH MEN AND WOMEN. Students are admitted at the beginning of each semester and summer session.

The right is reserved to refuse admission to any student with an academic record which creates doubt of his ability to succeed in college or who, for any other reason, would not be an acceptable student.

For admission procedure for students from foreign institutions, see below.

### APPLICATION FOR ADMISSION OR READMISSION

Forms for application for admission or readmission are available at the Office of the Director of Admissions, 2029 G Street NW., Washington, D. C. 20006; telephone: FE 8-0250, extension 344. No application fee is charged for admission to this Division.

Application for admission to *nondegree status* in the Division of University Students should be received, with credentials when required, no later than the days of registration, as stated in the Calendar.

### STUDENTS FROM FOREIGN INSTITUTIONS

Application, required records, and scores on the *Test of English as a Foreign Language* (see details below) *must* be received no later than three months before the opening of the semester for which admission is requested.

#### REQUIRED RECORDS

Applicants should request each educational institution previously attended to send directly to the Office of the Director of Admissions official credentials of: subjects studied; grades received; examinations passed; and diplomas, certificates, and degrees received from secondary schools and all colleges and universities attended. Records of required state examinations and certificates are also needed. The records presented become the property of the University and *cannot* be returned. These credentials should be in the language in which the institution maintains its official records. If these records are in a language other than English, the copies sent should be accompanied by an English translation. If it is not possible for the institutions to provide this translation, students will be expected to pay the nominal cost of necessary translation which will be arranged by The George Washington University.

#### LANGUAGE TEST

Students from countries whose official language is not English are required to take the *Test of English as a Foreign Language*. Students are responsible for making arrangements for taking the test and should address inquiries to: TOEFL, Educational Testing Service, Princeton, New Jersey 08540, U.S.A. The completed application form should be returned to the Testing Service and should reach Princeton no later than one month before the date of the test for which application is

made. A \$10 test fee, which should be remitted with the application, entitles the student to have his test score sent to three different institutions. Registration for the *Test of English as a Foreign Language* does not constitute application for admission to The George Washington University.

It is recommended that the examination be taken in the fall or winter to qualify for admission at the beginning of the following academic year.

The Bulletin of Information, obtainable without charge, contains descriptions of the test as well as rules regarding application, fees, reports, and the conduct of the test; lists of examination centers; examination dates; and application blank. On the application for the test, the student should specify that the scores be sent to the Director of Admissions, The George Washington University, Washington, D.C. 20006.

If additional tests are prescribed, necessary instruction will be sent to the applicant by the Director of Admissions.

## **READMISSION**

A student previously registered in the University who was not registered on campus during the immediately preceding semester (summer session excluded) must apply for readmission in the Office of the Director of Admissions.

## **ENTRANCE REQUIREMENTS \***

Good character and an academic background appropriate for the program of studies contemplated are required.

A person not working for a degree at this University will be considered for admission to the Division of University Students to take courses for which he has adequate preparation, as determined by the departments concerned.

## **SCHOLASTIC RECORDS**

### **Scholastic records are required of**

1. An applicant who graduated from high school within the previous two calendar years. Such an applicant must meet the following requirements for admission to Columbian College of Arts and Sciences.
  - a) An acceptable certificate of graduation from an accredited secondary school, showing at least fifteen units† which must include four years of English; at least two years of one foreign language; two years of science, preferably with laboratory instruction; two years of social studies, one of which must be American history; and two years of college preparatory mathematics. It is to be noted that one unit of algebra, or the equivalent, is prerequisite

\* Entrance requirements are established by the faculties of the several colleges, schools, and divisions.

The Director of Admissions, as agent for the faculties, administers regulations governing admission, readmission, and transfer.

† A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods, or the equivalent, of prepared classroom work.



to courses in chemistry and statistics, and that one unit in algebra and one unit in plane geometry, or the equivalent, are prerequisite to courses in mathematics and physics.

- b) The principal's statement that the applicant is prepared to undertake college work.
  - c) College Entrance Examination Board scores must be submitted on the Scholastic Aptitude Test and the English Composition Achievement Test.
2. An applicant who has been subject to any form of academic or disciplinary action at any college or university within the previous calendar year.

#### **Scholastic records may be required of**

- 1. An applicant who has attended any college or university during the previous calendar year.
- 2. A former student of this University who was on probation or suspended and, since then, has attended another college or university.
- 3. An applicant who has *ever* been subject to academic or disciplinary action.

When scholastic records are required, a student may be admitted for one semester or summer term only, pending receipt of records and under provisions stated by the Office of the Director of Admissions.

## **Registration**

A STUDENT CANNOT REGISTER for classes until he has received a letter of admission to the University, issued by the Office of the Director of Admissions (see "Admission").

A student previously registered in the University who was not on-campus during the immediately preceding semester (summer sessions excluded), must apply for readmission in the Office of Admissions.

No registration for credit is accepted for less than a semester or one summer session.

A student may not register concurrently in this University and another institution without the prior permission of the dean of the college, school, or division in which he is registered in this University. Registration in more than one college, school, or division of the University requires the written permission of the deans concerned, *prior to registration*. Allowance for credit for work done concurrently at another institution will be at the discretion of the appropriate committee.

#### **TIME AND PLACE OF REGISTRATION**

Registration for the Division of University Students is conducted in Building C, 2029 G Street NW., during the following periods: *fall semester*, September 16 and 17, 12:00 to 8:00 p.m.; September 18, 10:00 a.m. to 1:00 p.m. *Spring semester*, January 27 and 28, 12:00 to 8:00 p.m.; January 29, 10:00 a.m. to 1:00 p.m.

## Fees and Financial Regulations

FEES PAID BY THE STUDENT cover only a portion of the cost of instruction and of the operation of the University. Income from endowment funds, grants, and gifts from alumni and friends of the institution make up the difference.

The following fees were adopted for the academic year 1965-66.

### Tuition Fees

Full-time program (12 to 18 hours), each semester .....	\$700.00
Full-time program, each semester hour .....	46.00

### Additional Course Fees

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are charged by the semester and, unless otherwise indicated, may be defrayed in two payments when the tuition is paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

### Special Fees

Admission tests (when required) .....	6.00-12.00
Late-registration fee, for failure to register within the designated period .....	5.00
Change fee, for each change in program: dropping or adding a course, changing from one section to another within a course, change of status (from auditor to credit status or vice versa), and change in credit hours for a course .....	2.00
Withdrawal fee, charged in special cases .....	5.00
Service fee, for deferred payment plan (see "Payment of Fees") ..	5.00
Reinstatement fee, for reinstatement after financial suspension ...	10.00
For each examination to qualify for advanced standing and for each special examination .....	5.00
English test for foreign students (when required) .....	5.00
Laboratory checkout fee, for failure to check out of chemistry laboratory by the date deadline set by the instructor .....	3.00
Transcript fee, for each transcript of record .....	1.00

Registration in the University entitles each student to the following University privileges: (1) the services of the Placement Office; (2) the use of University library; (3) gymnasium privileges; (4) admission to all athletic contests, unless otherwise specified; (5) subscription to the *University Hatchet*, the student newspaper; (6) admission to University debates; (7) medical attention and hospital services as described under Health Services. These privileges terminate and a student is no longer in residence when he withdraws or is dismissed from the University.

### PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or attend classes until all fees are paid.



Tuition and fees for each semester are due and payable in full at the time of each registration.

However, a student registered for six semester hours or more may sign a contract with the Office of the Cashier at the time of each registration permitting him to pay one-half of the total tuition and fees (except for fees payable in advance) at the time of registration and the remaining half on or before November 3, 1965 (for the fall semester) and March 16, 1966 (for the spring semester). A service fee of \$5 will be charged for the use of this deferred payment plan. The University will not obligate itself to notify the student, in advance, of the payment-due date for the second half of the semester charges. Students who fail to make any payment when due will be automatically suspended and may not attend classes until they have paid all accrued fees and a \$10 reinstatement fee and have been officially reinstated by the Office of the Cashier.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

### WITHDRAWALS AND REFUNDS

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the dean of the college, school, or division in which the student is registered. Notification to an instructor is not an acceptable notice.

In authorized withdrawals and changes in schedule, cancellations of semester tuition charges and fees will be made in accordance with the following schedule:

1. *Complete withdrawal from the University:*

**Fall Semester**

Withdrawal dated on or before September 24, 1965 . . . 90 per cent  
Withdrawal dated September 27 to October 8, 1965 . . . 75 per cent  
Withdrawal dated October 11 to October 22, 1965 . . . 50 per cent  
Withdrawal dated after October 22, 1965 . . . . . none

**Spring Semester**

Withdrawal dated on or before February 4, 1966 . . . 90 per cent  
Withdrawal dated February 7 to February 18, 1966 . . . 75 per cent  
Withdrawal dated February 21 to March 4, 1966 . . . 50 per cent  
Withdrawal dated after March 4, 1966 . . . . . none

2. For a *change in status from full-time to part-time student* or for *partial withdrawal by a part-time student*, the above schedule applies to the difference in charges between the original program and the adjusted program continuing in effect.
3. A student enrolled in a full-time program, who drops or adds a course and continues to be in a full-time program, will have no financial adjustments of tuition made other than those involving course fees.

In no case will tuition be reduced or refunded because of absence from classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this be credited to another semester.

Students in chemistry who fail to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a \$3 checkout fee. A student who drops a course before the end of the semester must check out of the laboratory at the next regular laboratory period.

Students enrolled in the ROTC who fail to turn in uniforms, equipment, and textbooks, on separation from the Corps, are charged the value of the missing items.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

Students are encouraged to provide their own cash funds until they can make banking arrangements in the community.

## Regulations

A STUDENT ENROLLED in the University is required to conform to the following University regulations and to comply with the rules and regulations of the college, school, or division in which he is registered.

A student who withdraws or is suspended, or is otherwise absent from the University for one semester or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return.

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Dean) for subsequent registration in any unit of the University.

### AMOUNT OF WORK

A full-time student who is not on probation may take ordinarily not more than 17 semester hours. A student employed more than 20 hours a week, who is not on probation, may take not more than 10 hours.

A full-time student whose quality-point index is 3.50 or higher may take not more than 19 hours. An employed student who meets the same standard may take not more than 12 hours.

A student who accepts employment after registration or at any time during a semester must report that fact immediately to the Dean so that his program may be adjusted, if necessary.

### ATTENDANCE

A student may not attend classes until registration is completed and fees due are paid. Regular attendance is required. A student may be dropped from any course for undue absence.

A student suspended for any cause may not attend classes during the period of suspension.



## SCHOLARSHIP

A student who fails to maintain the scholarship requirements of this Division may be dismissed from the University.

## GRADES

Grades are mailed to the student through the Office of the Registrar at the close of each semester. They are not given out by instructors.

*Undergraduate.*—The following grading system is used: *A*, excellent; *B*, good; *C*, average; *D*, passing; *F*, failing; *CR*, indicates credit. Whenever a grade has not been assigned the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *I* indicates that a satisfactory explanation has been given the instructor for the student's failure to complete the required work of the course. An "incomplete" cannot be made up after the lapse of one calendar year except by written permission of the dean's council of the college, school, or division concerned. An incomplete which is not removed within one calendar year is automatically changed to an *F*. An incomplete cannot be removed by reregistering for credit for the course. A student may not repeat for grade a course in which he has received a grade of *D* or above, unless approved to do so by the department concerned. A written statement to this effect must be submitted to the Registrar by the appropriate departmental chairman.

*Graduate.*—For graduate work, grades are indicated as *A*, excellent; *B*, satisfactory; *C*, low pass; *F*, unsatisfactory; *I*, incomplete; *CR* indicates credit.

## THE QUALITY-POINT INDEX

Scholarship is computed in terms of the quality-point index, obtained by dividing the number of quality points by the number of semester hours for which the student has registered, both based on the complete record in the Division of University Students. A student is notified in writing whenever work from another part of the University has been considered in computing the quality-point index.

Quality points are computed from grades as follows: *A*, four points; *B*, three points; *C*, two points; *D*, one point; *F*, no points, for each semester hour for which the student has registered. Courses marked *W* or *I* are not considered in determining the index, except that courses marked *I* will be considered when a formal grade is recorded. An incomplete which is not removed within one calendar year is automatically changed to an *F*. Grades in courses taken at another institution are not considered in computing the quality-point index.

## PROBATION AND SUSPENSION

A student taking only first and second group courses must maintain a quality-point index of 2.00 or be placed on probation. He remains on probation as long as his index is below 2.00. If his index falls below 1.50, he is subject to suspension.

A student who is taking or has taken any third or higher group course must maintain a quality-point index of 3.00, or be placed on probation. He remains on probation as long as his index is below 3.00. If his index falls below 2.25, he is subject to suspension.

## EXAMINATIONS

Examinations are scheduled at the end of each semester or at the completion of the course.

#### ACADEMIC DISHONESTY

Evidence of dishonesty on the part of any student will result in his suspension from the University upon the recommendation of the Dean's Council.

A student found guilty of dishonesty will be suspended for a stated period and will be deprived of credit for all courses in which he is enrolled during the semester in which the dishonest act occurs. A disciplinary grade of "Failure—Academic Dishonesty" will be recorded for each such course, and this grade will be employed in computation of the quality-point index.

If a student suspended because of academic dishonesty should be readmitted, he may be required to repeat for grade all courses for which a disciplinary grade has been recorded, and both the grade earned on repetition and the disciplinary "Failure—Academic Dishonesty" grade will be employed in computation of the quality-point index.

#### WITHDRAWAL

Withdrawal from a course or from the University requires the permission of the Dean. Permission to withdraw from the University will not be granted a student who does not have a clear financial record. (See "Fees and Financial Regulations," pages 16 and 17-18.)

Withdrawal between the last working day\* in October and the end of the fall semester and between the last working day\* in February and the end of the spring semester is permitted only in exceptional cases.

*All charges for courses dropped without the approval of the Dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.*

#### CHANGES IN PROGRAM OF STUDIES

*Changes within the Division of University Students.*—A student may not change or drop courses (see "Withdrawal," above) or change his status to that of auditor except with the approval of the Dean.

Change from one section to another of the same course may be made with the approval of the Dean and the department concerned.

*Transfer within the University.*—Transfer to or from the Division of University Students may be made only with the approval of the deans concerned.

Application for transfer to degree candidacy will be considered only after the completion of at least one semester in the Division of University Students.

The student currently or previously registered in this Division who wishes transfer to degree candidacy should understand that consideration will be given to only those courses which are approved as applicable toward the degree sought and that a maximum of 45 semester hours of such credits earned in this Division can be so applied. Upon transfer the student should consult the dean concerned and understand clearly the requirements he must fulfill.

Normally, all work toward a Master's degree must be done in residence in the degree-granting college or school.

\* The University work week is Monday through Friday, inclusive.



## **CREDIT AND AUDIT**

Credit is given only after registration for a course and satisfactory completion of the required work.

In special instances, with the permission of the instructor, a person may be registered as an *auditor* in a class without being required to take active part in the exercises or to take examinations, but no credit will be allowed for such attendance. A student who takes a course as an auditor may not take the same course later for credit.

An auditor may be admitted late in any semester or summer term with the permission of the instructor and department concerned.

## **TRANSCRIPTS OF RECORD**

Official transcripts of student records will be issued on request of the student or former student. A fee of one dollar is charged for each transcript. No certificate of work done will be issued for a person who does not have a clear financial record.

## **THE LIBRARY**

A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card issued upon the payment of fees, must be presented as identification.

The loan period for most books available for home circulation is two weeks, with an additional two-week renewal. A fine of five cents will be charged for each day a book is overdue. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

## **RIGHT TO DISMISS STUDENTS**

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

## **RIGHT TO CHANGE RULES**

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

## **PROPERTY RESPONSIBILITY**

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

## Student Services

### HEALTH SERVICES\*

THE HEALTH SERVICES STAFF assists students with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open from 9 A.M. to 5 P.M., Monday through Friday during the academic year and Summer Sessions, with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge. For night and week-end emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Services, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.

Medical privileges include: (1) physical examination of all students who are applicants for courses in Physical Education†; (2) three visits in any one illness by a member of the Health Services Staff, office or residence (District of Columbia); (3) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Services‡. All additional hospital charges for operating room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye refraction and provision of glasses; orthopedic examinations and application of cast or other appliance; laboratory and X-ray work; and surgical operations must be paid by the student.

This medical benefit applies only to illness or disability incurred while currently enrolled in the University. It does not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Services is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Services has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each semester; (5) hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

\* The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the physical education departments.

† A charge for a special physical examination is made by the University if a student fails to appear for a physical examination during the period set for this purpose.

‡ See Rule (5) for exception.



### THE READING CENTER

The Reading Center 2018 I Street NW., offers individual diagnostic and corrective services for all levels: primary, elementary, secondary, and adult. In addition special reading improvement classes are conducted on the high school and adult level.

A complete diagnosis includes psychological tests; vision, hearing, and dominance tests; and the various reading and spelling tests. Results are interpreted and a written report is presented in conference with the parents or the individual.

The special reading classes for high school students and adults are offered throughout the year at stated intervals. Special classes for study skills and spelling are also available. Emphasis is placed on improvement of vocabulary, speed, comprehension, and study skills. Machines such as the tachistoscope, rate accelerator, and controlled reader are also used for increasing speed of comprehension.

*Reading Clinic.*—The fee for individual diagnosis is \$45; for individual instruction, \$6 a lesson; for semi-individual instruction, \$5 a lesson; for instruction in small groups with common reading difficulties, \$3.75 a lesson.

*Reading Improvement.*—Classes are offered for students on the high school, college, and college graduate levels. Students are grouped according to needs, and emphasis is placed on comprehension, vocabulary, study skills, spelling, and speed as needed. The fee for full-time students currently registered in the University is \$45 a semester; for other clients, \$75 for twenty class periods.

All fees are payable in advance at the Office of the Cashier.

### THE SPEECH CLINIC

The Speech Clinic, Lisner Auditorium, 730 Twenty-first Street NW., offers diagnostic and corrective work for children and adults with such speech difficulties as stuttering, lisping, cleft palate, cerebral palsy, aphasia, foreign accent, voice, and articulatory problems.

*Fees.*—There is no charge for the diagnosis. The fee for individual instruction is \$7 an hour; for group instruction, \$4 an hour. Fees are payable at the Office of the Cashier.

### THE PSYCHOLOGICAL CLINIC

The George Washington University Psychological Clinic, 718 Twenty-first Street NW., offers services which are available primarily to students enrolled in the University and secondarily to high school students and to adults in the community. The latter are selected by the Clinic in accordance with training and research interests of the Clinic Staff.

The services are designed to assist individuals in the evaluation of their educational, personal, and social lives; diagnose academic difficulties and provide remedial measures such as study habits instruction and programmed instruction; and refer individuals to qualified agencies for assistance with problems not handled by the Clinic. Individual psychotherapy is available.

The Clinic also provides special assessments including: diagnostic measures prescribed by the School of Engineering and Applied Science,

admissions tests for the University and for other selected educational institutions, and some selected assessments for business and industry.

*Fees.*—For students who are currently registered as degree candidates in the University, the fee is \$10; for students currently enrolled in the University but not as degree candidates, the fee is \$40; for graduates of the University, \$40; for community clients, \$65. Fees for specialized testing are dependent upon the services involved. All fees are payable at the Office of the Clinic.

#### RESIDENCE HALLS

Information concerning residence halls is available at the offices of the Dean of Men and the Dean of Women.

#### STUDENT UNION

The Student Union, 2125 G Street NW., and the Student Union Annex, 2127 G Street NW., are centers of student life on the University campus. The cafeteria on the first floor of the Union building serves breakfast, lunch, and dinner as well as snacks. The second floor is reserved as a dining hall for resident students, and the third floor features a modern vendeteria and delicatessen. The University Ticket Office, on the first floor, handles the tickets for all nonathletic University events and outside events offering student rates. The Student Union Annex houses the Student Activities Office which maintains information concerning student organizations and campus events. The meeting rooms and offices for the Student Council, other campus organizations, and student publications are also found in the Annex. The facilities of the Student Union make it possible for the nonresident student to participate more fully in campus life.

#### UNIVERSITY BOOK STORE

The University Book Store is in a separate building at the quad entrance to the Union. The Book Store carries a wide selection of school supplies and sundry items in addition to text books for all courses.

#### RELIGIOUS LIFE

The University recognizes the contribution that religion makes to the life of its students and encourages them to participate in the religious organizations of their choice. Catholic, Jewish, and Protestant bodies sponsor these groups and form a link between the University and the religious community. The advisers of the religious organizations are available for counseling.

#### UNIVERSITY CHAPEL

The University Chapel is a nonsectarian service of worship for the University community. The service is held Wednesday of each week from 12:10 to 12:30 o'clock at 1906 H Street NW. Among the guest speakers are representative clergymen of Washington. The Director of University Chapel is available for counseling on personal problems.



## THE PLACEMENT OFFICE

The Placement Office, 2114 G Street NW., provides assistance to students and alumni seeking full-time, part-time, temporary, or permanent employment. The Office maintains a registry of positions available in many fields, both locally and nationally, and refers qualified applicants for consideration. The Office administers the On-Campus Industrial and Government Recruitment Interview Program for seniors and graduate students, in which well over 150 private companies, as well as certain government agencies, participate.

Students and alumni interested in placement are asked to register in person at the Office and to select from written descriptions of current openings positions for which they wish referral. Those interested in planning careers are invited to study the information on career fields and the brochures of business, industry, and government, which are on display in advance of campus visits by recruiting officers. The Office also provides individual counseling to students and alumni wishing career guidance.

## INTERNATIONAL HOUSE

International House, 2110 G Street NW., is the social center for students from foreign countries. A series of teas, dances, and other forms of entertainment, and the use of club rooms and lounge enable students to become acquainted and feel at home in the University.

The International Students' Society welcomes as members students from other lands as well as North American students.

The Director of Foreign Student Affairs, whose office is in International House, is available for advice and guidance.

## VETERANS EDUCATION

The personnel of the Office of the Dean of Men act as advisers to veterans and war orphans and in a liaison capacity between the University and the Veterans Administration. This Office should be consulted concerning educational benefits before applying to the Veterans Administration for certification. The Veterans Administration is located at 1717 Massachusetts Avenue N.W., Washington, D. C. 20421.

### PUBLIC LAW 634 (WAR ORPHANS' EDUCATIONAL ASSISTANCE ACT)

A child of a person who died of a disease or injury incurred or aggravated while on active duty in the Armed Forces during World War I, World War II, or the Korean Conflict; or a child of a person who has a total disability, permanent in nature, resulting from a service connected disability; or a child of a person who died as a result of such a disability, may be eligible for educational assistance under this Act, if certain age requirements are met. In the case of a child who has not reached the age of majority, his guardian must make application for him to the Veterans Administration.

### PUBLIC LAWS 16, 894, AND 87-815 (VOCATIONAL REHABILITATION)

Disabled veterans desiring vocational rehabilitation under these laws should apply to the Veterans Administration for approval of their training objectives at least sixty days prior to registration.

## COURSES OF INSTRUCTION

ON THE FOLLOWING PAGES of this CATALOGUE, under the alphabetically arranged names of the departments of instruction, are listed the courses of instruction offered by the University in the summer of 1965 and in the academic year 1965-66. The courses as here listed are subject to change. The University reserves the right to withdraw any course announced.

### HOURS OF INSTRUCTION

Classes are scheduled in the morning, afternoon, and evening. Evening and daytime sections of the same course are identical, are taught by the same staff of instructors, and carry the same amount of credit. By taking the evening and summer classes and extending the time of study beyond the usual four years, a part-time student may complete the requirements and obtain a degree.

### EXPLANATION OF COURSE NUMBERS

*First-group courses.*—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. With the approval of the adviser and the dean, they may also be taken by juniors and seniors. In certain instances, they may be taken by graduate students to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

*Second-group courses.*—Courses numbered from 101 to 200 are planned for students in the junior and senior years. They may be credited toward higher degrees only when registration for graduate credit has



been approved at the beginning of the course by the dean responsible for the graduate work and by the instructor and when the completion of additional work has been certified by the instructor.

*Third-group courses.*—Courses numbered from 201 to 300 (in Columbian College of Arts and Sciences and the School of Government, Business, and International Affairs), courses numbered 201 to 400 (in the School of Education) are planned primarily for graduate students. They are open, with the approval of the instructor to qualified seniors; they are not open to other undergraduates.

*Fourth-group courses.*—Courses numbered 301 to 400 in Columbian College of Arts and Sciences are limited to graduate students; but they are primarily for doctoral candidates. In the School of Education fourth-group courses, numbered 401 to 500, are limited to graduate students with Master's degrees from accredited institutions.

#### INDICATION OF THE AMOUNT OF CREDIT

The number of semester hours of credit given for the satisfactory completion of a course is, in most cases, indicated in parentheses after the name of the course. Thus, a year course giving 3 hours of credit each semester is marked (3-3), and a semester course giving 3 hours of credit is marked (3). A semester hour usually consists of the completion of one fifty-minute period of class work or of one laboratory period a week for one semester.

## Accounting

See "Government and Business."

## American Thought and Civilization

### 101 American Civilization (3)

The Staff

Lecture (1¼ hours), discussion (1¼ hours). This is a University-sponsored course designed to offer all students, toward the end of their residence, a broad assessment of the culture in which they are to live and to work. Contemporary problems and characteristics of American society are presented against the background of the humanities and social sciences. Each lecture is delivered by an authority on a particular subject: political, social, and economic problems; international attitudes; important trends in literature, science, the arts, religion, and philosophy. Discussion sections will combine lecture materials with assigned readings in order to achieve an ordered sense of the over-all state of American civilization. Prerequisite: successful completion of 85 semester-hours credit. Open to undergraduate and graduate students, but available for graduate credit only with the approval of the department and college concerned. Not available for graduate credit in Columbian College of Arts and Sciences. Recommended as an elective, but not to be taken as part of any major program without specific departmental approval. (Fall—late afternoon; spring—evening.)

150 *Material Culture of the United States* (3)

## **Anatomy**

*Professors* I. R. Telford (*Chairman*), Paul Calabrisi

*Associate Professors* F. D. Allan, T. N. Johnson, J. B. Christensen

*Assistant Professor* J. C. Bartone

- 201 **Gross Anatomy** (8) Calabrisi and Staff  
Regional dissection of the human body, supplemented with lectures and quiz sections. Study of X-ray anatomy to emphasize the functional aspects of the position, shape, and relation of the viscera and skeletal components. Laboratory fee, \$30. (Fall—as arranged.)
- 203 **Human Embryology** (1) Allan and Staff  
The origin and development of the human body. Special emphasis on the value of embryology in interpreting anatomical anomalies and variations as seen on gross dissection, surgery, obstetrics, and pathology. (Fall—as arranged.)
- 204 **Neuroanatomy** (2) Johnson and Staff  
The macroscopic and microscopic study of the central nervous system and the special sense organs. Emphasis on such dynamic aspects as development, pathways, lesions, etc. Laboratory fee, \$13. (Fall—as arranged.)
- 205 **Microscopic Anatomy** (3) Telford and Staff  
Study of the detailed minute structure of cells, tissues, and organs of the human body, with emphasis on the relation of structure to function. Recognition and interpretation of historical sections tested by practical examinations. Laboratory fee, \$13. (Fall—as arranged.)
- 221-22 **Seminar** (1-1) Telford and Staff  
Research reports and discussions of special topics by the Staff and graduate students. For graduate students. Medical students are encouraged to attend. (Academic year: 1 hour a week—as arranged.)
- 249-50 **Introduction to Medical Research** \* (3-3) The Staff  
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—anatomical, statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, \$7.50 a semester. (Academic year—W 1-5 pm.)
- 252 **Physical Anthropology** (1) Stewart, Angel  
An elective course for medical students; open to a limited number of graduate students. Variations in man and factors affecting them. Human evolution and racial differences. Anatomy and culture of ancient man. (Spring—as arranged.)
- 254 **Fetal Anatomy** (1) Allan  
An elective course for medical students; open to a limited number of graduate students.

\* This is an interdepartmental course. The student should register in the department directing his research.



ate students. Dissection of an early and a late human fetus. Comparison of fetal and adult structures. Discussions stressing the embryonic significance of important structures. Laboratory fee, \$8. (Spring—as arranged.)

**256 Human Genetics (1)**

Jacobson

An elective course for medical students; open to a limited number of graduate students. General principles of genetics, cytogenetics technics, aneuploidy in man and its significance, biochemical aspects of heredity, and genetic counseling. (Spring—as arranged.)

**260 Gross Anatomy of Upper Extremity (2)**

Calabrisi, Christensen

An elective course for medical students; open to a limited number of graduate students. Detailed dissection of the region, supplemented by X-ray anatomy; discussions and assigned reading. Laboratory fee, \$10. (Spring—as arranged.)

**262 Gross Anatomy of Lower Extremity (2)**

Calabrisi, Christensen

An elective course for medical students; open to a limited number of graduate students. Detailed dissection of the region, supplemented by X-ray anatomy; discussions and assigned reading. Laboratory fee, \$10. (Spring—as arranged.)

**264 Gross Anatomy of Head and Neck (2)**

Calabrisi, Christensen

An elective course for medical students; open to a limited number of graduate students. Detailed dissection of the region, supplemented by X-ray anatomy; discussions and assigned reading. Laboratory fee, \$10. (Spring—as arranged.)

**266 Gross Anatomy of Thorax and Abdomen (2)**

Calabrisi, Christensen

An elective course for medical students; open to a limited number of graduate students. Detailed dissection of the region, supplemented by X-ray anatomy; discussions and assigned reading. Laboratory fee, \$10. (Spring—as arranged.)

**268 Gross Anatomy of Pelvis and Perineum (2)**

Calabrisi, Christensen

An elective course for medical students; open to a limited number of graduate students. Detailed dissection of the region, supplemented by X-ray anatomy; discussions and assigned reading. Laboratory fee, \$10. (Spring—as arranged.)

**270 Dissection of the Human Brain (1)**

Johnson

An elective course for medical students; open to a limited number of graduate students. Dissection of the major pathways and nuclei of the human brain, with a consideration of the ventricular system. Conferences and assigned reading. Laboratory fee, \$10. (Spring—as arranged.)

**272 Autonomic Nervous System (1)**

Allan

An elective course for medical students; open to a limited number of graduate students. Lectures on the development, histology, gross anatomy, and function of central and peripheral components of the autonomic nervous system. Relation to visceral afferent pathways defined and role of pathways in visceral and referred pain considered. (Spring—as arranged.)

**274 Tissues of the Body (1)**

Telford

An elective course for medical students; open to a limited number of graduate students. Weekly lecture on basic concepts in anatomy, with special emphasis on primary tissues of the body—their histogenesis, growth processes, generalized and specific functions, regenerative capacities, aging and death. (Spring—as arranged.)

- 276 **Microscopic Research Techniques (1)** Bartone  
An elective course for medical students; open to a limited number of graduate students. Various histological and histochemical methods of research. Specified laboratory techniques in the preparation of tissues for microscopic observation. Laboratory fee, \$8. (Spring—as arranged.)
- 295-96 **Research (arr.)** The Staff  
Fee to be arranged. (Academic year—as arranged.)
- 299-300 **Thesis (3-3)** The Staff

## Anthropology

*Professorial Lecturers* J. L. Angel, S. T. Boggs, T. D. Stewart  
*Associate Professor* P. F. Gallagher (*Chairman*)  
*Assistant Professors* Ruth Krulfeld, R. K. Lewis, D. E. Walker, Jr.

### FIRST GROUP

- 1-2 **Introductory Anthropology \* (3-3)** The Staff  
(Replaces Anthropology 1 and Anthropology 52)  
*First half:* a survey of man's origin, physical evolution, and culture history.  
*Second half:* a survey of the world's cultures, illustrating the principles of cultural behavior. (*First half:* fall—day and evening; spring—evening.  
*Second half:* fall—evening; spring—day and evening; summer 1965—offered as Anthropology 1 *Man, Culture, and Society I* (3).)

### SECOND GROUP

- 150 **Comparative Value Systems (3)** Krulfeld  
An examination of world views, conceptual systems, and value hierarchies of representative cultures throughout the world. (1965-66 and alternate years: spring—day.)
- 151 **Introduction to Primitive Economics (3)** Krulfeld  
An introduction to the cross-cultural study of the allocation of goods and services, including an examination of primitive subsistence patterns. (1966-67 and alternate years.)
- 153 **Psychological Anthropology (3)** Gallagher  
The relevance of psychoanalytic and learning theories to the cross-cultural study of personality. Cultural determinants of personality formation and mental health. (Fall—day; summer 1965.)
- 154 **Mythology and Folklore (3)** Walker  
Unwritten literature as an expression of the imaginative and creative thought of nonliterate peoples; the place of mythology and folklore in social organization, in enculturation, and in social control. (1965-66 and alternate years: spring—day.)
- 155 **Primitive Religion (3)** Walker  
Conceptions of the supernatural in nonliterate societies. An examination of religious beliefs and practices; the interrelatedness of religion, magic, and philosophy. (Fall—day.)

\* Anthropology 1-2 is prerequisite to all second group courses.



- 156 Witchcraft and Sorcery (3)** Walker  
Approaches to the analysis of the functions of witchcraft and sorcery among primitives; a survey of extant studies of witchcraft and sorcery with particular attention to their place in social control and organization. (1965-66 and alternate years: spring—day.)
- 157 Primitive Social Organization (3)** Walker  
Approaches to the analysis of the social organization of primitive peoples; kinship, economic, and political systems; variation of qualitative and quantitative complexity in relation to ecological changes. (Fall—day.)
- 158 Art and Culture (3)** Krulfeld  
A study of the artist in tribal society, including an analysis of the role of art in culture, and the influences upon the artist, as well as an examination of beliefs and practices associated with art production. (Spring—day.)
- 159 Ethnoscience (3)** Gallagher  
A comparative study of branches of knowledge, such as astronomy, botany, mathematics, psychology, technology, and zoology, as these are empirically derived and systematically arranged in selected preindustrial societies. (1965-66 and alternate years: spring—day.)
- 161 Language and Culture (3)** Gallagher  
The structure and semantics of systems of human communication, linguistic change, the influence of language on world view. (Fall—day.)
- 162 Linguistics in Anthropology (3)** Walker  
The anthropological field use of structural analysis, sounds of language-phonetics and phonemics, techniques of linguistic recording and analysis, field work. (Fall—as arranged.)
- 171 Native Peoples of North America (3)** Gallagher  
A survey of Indian groups representative of each of the culture areas of the continent, stressing the patterned nature of diverse culture responses to universal problems of human existence. (1965-66 and alternate years: fall—evening.)
- 172 Native Peoples of South America (3)** Gallagher  
A survey of Indian groups representative of each of the culture areas of the continent, stressing the patterned nature of diverse culture responses to universal problems of human existence. (1965-66 and alternate years: spring—evening.)
- 173 Cultures of the Pacific (3)** Lewis  
A study of the culture, history, and ways of the life of the native peoples of Melanesia, Micronesia, and Polynesia. (1966-67 and alternate years.)
- 74 Far Eastern Communities (3)** Krulfeld  
The community study approach in anthropology as applied to selected villages in such Asian areas as China, Japan, and Malaysia. (1966-67 and alternate years.)
- 75 Cultures of Southeast Asia (3)** Krulfeld  
A survey of representative Southeast Asian cultures from primitive groups to high civilizations, stressing the similarities and diversities of patterned cultural responses to basic human problems in one area of the world. (1966-67 and alternate years.)
- 76 Cultures of the Circumpolar Region (3)** Lewis  
A survey of the various social and economic adaptations to an extreme climate made by the peoples of the northern sub-arctic and arctic regions,

stressing diverse cultural solutions to similar problems. (1966-67 and alternate years.)

- 177 **Cultures of the Near East (3)** Lewis  
A study of the geographic environment, language, religion, and social structure of the settled and nomadic peoples of the Near East, with emphasis on the Arab world. (1966-67 and alternate years.)
- 178 **Cultures of South and East Africa (3)** Walker  
The comparative examination of the history, cultural development, and contemporary problems of cultures of southern and eastern Negro Africa. (1965-66 and alternate years: fall-day.)
- 179 **Cultures of West and Central Africa (3)** Walker  
The comparative examination of the history, cultural development, and contemporary problems of cultures of western and central Negro Africa. (1965-66 and alternate years: spring-day.)
- 182 **New World Archeology (3)** Gallagher  
A survey of pre-Columbian culture history, from man's entry into the Americas during the Pleistocene Ice Age until the time of the first European contacts. (1965-66 and alternate years: fall-evening.)
- 183 **Old World Archeology (3)** Gallagher  
A survey of the culture of the history of man exclusive of the Americas, from the earliest hominid cultures to the advanced civilizations and their secondary centers. (1966-67 and alternate years.)
- 186 **Physical Anthropology (3)** Stewart, Angel  
(Formerly Anthropology 152)  
A study of human variation past and present, seen as a product of physical and cultural evolution. (Spring-evening.)
- 192 **Anthropological Theory (3)** Krulfeld  
Analysis of the theoretical postulates and assumptions underlying the development of modern cultural anthropology. (Fall-day.)
- 193 **Anthropological Methods (3)** Walker  
Approaches to library and field research in linguistics, archeology, and ethnography; conceptual bases and bias in the delineation of problems, in the selection, analysis and organization of data, and in the preparation of the final report. (1965-66 and alternate years: fall-evening.)

### THIRD GROUP

- 262 **Applied Anthropology (3)** Boggs  
The use of anthropological methods and techniques in such specific fields as government, business, law, and medicine. (1965-66 and alternate years: spring-evening.)
- 263 **Culture Contact and Change (3)** Walker  
Western impact on non-Western cultures. The workings and the processes of social change as variant cultures and ethical systems interact. (1966-67 and alternate years.)
- 264 **Museum Techniques (3)** The Staff  
Principles of collection, classification, identification, and interpretation of archeological, paleontological, ethnobotanical, and ethnographic specimens; presentation to the public of the cultural significance of prepared specimens;



research and instructional use of the museum. (1966-67 and alternate years.)

- 265 **Cultural Ecology** (3) Lewis  
A cross-cultural examination of the relationship of technology to the natural world. (1965-66 and alternate years: spring—day; summer 1965.)
- 266 **Technology** (3) Krulfeld  
A cross-cultural examination of the form, function, meaning, and use of material culture and the behavior patterns involved in its production. (1965-66 and alternate years: fall—day.)
- 267 **Primitive Economics** (3) Krulfeld  
The comparative study of preindustrial systems of production, distribution, and consumption. An inquiry into the applicability of Western laws of economic analysis to non-Western societies. (1966-67 and alternate years.)
- 268 **Peasant Society** (3) Krulfeld  
A cross-cultural analysis of peasant societies, including an examination of their general features and their manner of functioning within their larger social, economic, and cultural context. (1966-67 and alternate years.)
- 271 **Linguistics and Culture History** (3) The Staff  
The relation of linguistics and cultural history in the New World: the use of such techniques as glottochronology and lexico statistics as supplements to archeological techniques in prehistoric chronology and cultural reconstruction. (Fall—as arranged.)
- 295-96 **Research in Anthropology** (arr.) The Staff  
(Academic year—as arranged.)
- 299-300 **Thesis** (3-3) The Staff  
(Academic year—as arranged; summer 1965.)

## **Applied Science**

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See "Engineering and Applied Science"

## Art

*Professors* D. C. Kline (*Chairman*), W. A. MacDonald

*Professorial Lecturer* Grace Evans

*Associate Professor* L. P. Leite

*Assistant Professor* D. H. Teller

*Studio Lecturers on the Staff of the Corcoran School of Art* E. M.

Archer, Heinz Warneke, Jack Perlmutter, Alexander Russo, Richard Lafean, Joseph Taney, Don Turano, Clifford Chieffo, Albert Davis, Teruo Hara, Paul Hoffmaster, Francis Luzzatto, Carol Ellis, John Gunning, Arthur Iddings, Louis Nolan, John Schoemaker, Arthur Terry, James Twitty, Berthold Schmutzhart, Harold Isen, Malcolm Wright

*Instructors* H. I. Gates, F. O. Griffith, Lilien Filipovitch

*Instructor (part-time)* Richard Madigan

### ART HISTORY AND THEORY

#### FIRST GROUP

##### 1 Art Appreciation (3)

Filipovitch

The language and function of art in its various media; the historical development of styles, aesthetic principles, theories, and the ideas in art through the ages. Primarily for nonmajors. (Fall and spring—day and evening; summer 1965.)

##### 31-32 Survey of Western Art (3-3)

Filipovitch

A survey of the arts in the Western World from prehistoric to modern times. A foundation for further study in the history of art. (Academic year—day and evening.)

##### 71-72 Introduction to the Arts in America (3-3)

Kline

Painting, sculpture, and architecture of America, with selected references to the crafts and popular arts. *First half*: from Colonial beginnings to the Republican Age. *Second half*: from early 19th century to the present. (Academic year—day; summer 1965—Art 72 (3).)

#### SECOND GROUP

##### 101 Greek and Roman Architecture (3)

MacDonald

(Fall—day and evening.)

##### 102 Greek and Roman Sculpture (3)

MacDonald

(Spring—day and evening.)

##### 103 Medieval Art (3)

Evans

Architecture, sculpture, and painting from the formative stages of Christian Art in the Byzantine Age through the Romanesque and Gothic periods. (Fall—day.)

##### 104 Renaissance Art in Italy I (3)

Leite

The early developments from the 13th to the 15th century. (Fall—day.)



- 105 **Renaissance Art in Italy II (3)** Leite  
The High Renaissance and Mannerism. (Not offered 1965-66.)
- 106 **Renaissance Art in the North (3)** Leite  
The painting in the Netherlands, Germany, France, Spain, and Portugal. (Summer 1965.)
- 107 **Eighteenth Century Art in Europe (3)** Evans  
The development of painting, sculpture, and architecture in 18th century Europe. (Spring—day.)
- 109 **Nineteenth Century Art in Europe (3)** Leite  
Painting and sculpture from Academism to Symbolism. (Summer—1965.)
- 110 **Contemporary Art (3)** Leite  
Painting and sculpture in 20th century Europe. (Spring—day.)
- 111 **Classical Archeology (3)** MacDonald  
Archeological monuments of classical civilizations, with intensive study of one or more areas selected from architecture, sculpture, painting, or minor arts. (Fall—day.)
- 112 **Art of Egypt and the Ancient Orient (3)** MacDonald  
A study of the art of Mesopotamia, Anatolia, Egypt, and Persia. (Fall—day.)
- 113 **Baroque Art in Italy (3)** Leite  
The development of painting, sculpture, and architecture in the 16th and 17th centuries in Italy. (Fall—day.)
- 114 **Baroque Art in the North (3)** Evans  
The development in painting, sculpture, and architecture in the 16th and 17th centuries in Holland, Flanders, Spain, France, Germany, and England. (Summer 1965.)
- 115 **Christian Iconography (3)** Leite  
The origins and development of Christian symbols and themes from Early Christian to modern times. (Fall—day.)
- 116 **Classical Iconography (3)** MacDonald  
The origin and development of myths in classical art. (Summer 1965.)
- 120 **Art of China and Japan (3)** Kline  
The architecture, painting, and sculpture of China, Korea, and Japan. (Fall—day.)
- 141 **Interior Decoration (4)** Kline  
Lecture (2 hours), laboratory (3 hours). The principles of decoration dealing with furniture designs and ensemble layout, draperies, color, accessories, and lighting. Studio fee, \$5. (Summer 1965.)
- 142 **House Planning (3)** Kline  
The contemporary house for family living, including site problems, the case plan, materials of building, and climate conditioning. (Not offered 1965-66.)

- 145 **Folk Arts in America (3)** Kline  
Ceramics, woodcarving, ironwork, decorative painting, weaving, and other crafts; selected references to American folk music. (Not offered 1965-66.)

- 146 **Principles of Museum Work (3)** Madigan  
An introduction to the history and development of museums; a study of the problems of museum administration, connoisseurship, cataloguing, installation, conservation, and educational service. Prerequisite to graduate study in museology. Field trips to galleries and museums will be arranged. (Fall and spring—evening.)

### THIRD GROUP

- 203 **Primitive Art \* (3)** Kline  
The arts of prehistoric and primitive man in Europe in the pre-Columbian Americas, Oceania, and Africa. (Spring—day.)
- 207 **Modern Architecture (3)** Kline  
The development of modern architecture and building technology in Europe and America from the late 19th century to the present. (Spring—day.)
- 243 **Seminar: American Art (3)** Kline  
Specific area to be announced in the Schedule of Classes. (Fall—day.)
- 244 **Seminar: 19th Century Art (3)** Leite  
Specific area to be announced in the Schedule of Classes. A reading knowledge of French is desirable. (Not offered 1965-66.)
- 245 **Seminar: 20th Century Art (3)** The Staff  
Specific area to be announced in the Schedule of Classes. (Not offered 1965-66.)
- 246 **Seminar: Classical Art (3)** MacDonald  
Specific area to be announced in the Schedule of Classes. (Fall—evening; summer 1965.)
- 249 **Theory of Design (3)** Teller  
Application of design principles to painting, architecture, sculpture, and minor arts of today. Individual examples will be examined and discussed in order to show the relationship of design principles to the contemporary artist and his work. Open to undergraduate students with the permission of the instructor. (1965-66 and alternate years: fall—day.)
- 261 **Art Theory and Criticism (3)** The Staff  
History of theory and criticism with area of concentration selected from Classical, Medieval, Renaissance, and Modern fields. (Spring—day.)
- 271-72 **Museum Techniques (6-6)** The Staff  
Assignments in intern training in museum work. The work of each semester will be concentrated into a six-week period, Monday through Friday, from 9 a.m. to 5 p.m. Prerequisite: Art 146. (Academic year—as arranged.)
- 289-90 **Thesis (3-3)** The Staff  
(Academic year—as arranged; summer 1965.)

\* May be taken for undergraduate credit with the approval of the instructor.



## DRAWING, PAINTING, SCULPTURE, GRAPHICS, DESIGN, AND CERAMICS

### FIRST GROUP

- 10 **Art Structure (3)** Teller  
Basic studio course for non-art majors. Studies in line, form, color, texture, and their everyday use are pursued for their enrichment value. Material fee, \$10. (Fall and spring—day.)
- 21-22 **Basic Design \* (3-3)** Teller, Gates  
Fundamental studies of the principles and elements of design. *First half:* study of two-dimensional design. *Second half:* three-dimensional studies. Material fee, \$10 a semester. (Academic year—day and evening; summer 1965.)
- 35-36 **Advertising Design I (3-3)** Schmutzhart  
Basic drawing problems related to design. Prerequisite: Art 21-22 and 41-42. (Academic year—day and evening.)
- 41-42 **Drawing I (3-3)** Isen  
An introductory course in object and figure drawing and mechanical perspective. (Academic year—day and evening; summer 1965—Art 41 (3).)
- 51-52 **Ceramics I (3-3)** Lafean and Staff  
Basic techniques for clay preparation, hand forming, wheel throwing, and the application of slip glazes and vitreous glazes through workshop and illustrated lectures. Material fee \*, \$25 a semester. (Academic year—day and evening.)
- 57-58 **Introduction to Graphic Techniques (3-3)** Griffith  
Exploration of the methods of intaglio, relief, serigraphy, and other composite methods. Studio fee, \$10 a semester. (Academic year—day and evening; summer 1965.)
- 65-66 **Painting I (3-3)** Chieffo  
Basic color composition and fundamental painting techniques. (Academic year—day and evening; summer 1965—Art 65 (3).)
- 81-82 **Sculpture I (3-3)** Warneke, Turano  
Clay and plaster modeling, and casting techniques. Material fee \*, \$10 a semester. (Academic year—day and evening; summer 1965.)

### SECOND GROUP†

- 121-22 **Design: Structured (6-6)** Gates  
A structured course that extends the student's design experience through a series of problems involved with both two- and three-dimensional media. Emphasis is placed on problem solving through experimentation with materials and tools. Material fee, \$10 a semester. (Academic year—as arranged.)
- 123-24 **Design: Individual Problems (6-6)** The Staff  
Emphasis is placed on the individual student and the problems and materials that specifically interest him in any area of design. Prerequisite: Art 121-22. (Academic year—as arranged.)

\* Art 21-22 is prerequisite to all other studio courses.

† All second-group courses may be repeated for credit with the approval of the Department.

- 125-26 **Painting II (6-6)** Twitty  
Development of basic concepts carried into personal statement. (Academic year—day and evening; summer 1965—Art 125 (3), Art 126 (3).)
- 127-28 **Painting III (6-6)** Russo  
Exploratory efforts in the development of style using advanced methods and materials. (Academic year—day and evening; summer 1965—Art 127 (3).)
- 131-32 **Ceramics II (6-6)** Hara  
Basic techniques in clay and glaze formation, advanced wheel throwing and hand forming, mosaic. Individual projects in a choice of techniques. Material fee \*, \$30 a semester. (Academic year—day and evening.)
- 139-40 **Design Workshop (3-3)** Gates  
Exploration of design possibilities in wood, metal, textile, plastics, and other materials. Studio fee, \$10 a semester. (Summer 1965.)
- 143-44 **Serigraphy (3-3)** Teller  
Advanced problems in serigraphy with emphasis on its aesthetic possibilities. Studio fee, \$10 a semester. Prerequisite: Art 57-58. (Academic year—day.)
- 147 **The Development of Graphic Techniques (3)** Griffith  
A study of the graphic techniques of print makers from the 15th century to the present. (Not offered 1965-66.)
- 151-52 **Ceramics III (6-6)** Lafean  
Advanced glaze calculation, experimentation in reduction firing, individual problems in formation techniques, and problems in series production for the studio artist. Advanced decorating and finishing techniques. Material fee \*, \$30 a semester. (Academic year—day and evening.)
- 153-54 **Etching (3-3)** Griffith  
Prerequisite: Art 57-58. (Academic year—day and evening.)
- 157-58 **Relief Printing (6-6)** Perlmutter  
Relief printing and wood block, with special reference to western and eastern techniques. (Academic year—day.)
- 159-60 **Drawing II (3-3)** Russo  
Special problems in anatomy and drawing and painting of the life model in action. (Academic year—day and evening.)
- 161 **Workshop in Ceramics—Beginning (3)** Lafean and Staff  
Material fee \*, \$25. (Summer 1965.)
- 162 **Workshop in Ceramics—Advanced (3)** Lafean and Staff  
Material fee \*, \$35. (Summer 1965.)
- 163-64 **Welding (3-3)** Gates  
Special problems in welded sculpture. Material fee, \$10 a semester. (Academic year—day.)
- 165-66 **Painting, Drawing, and Composition (6-6)** Archer  
Primarily for nonmajors. (Academic year—day and evening.)

\* Material fees for courses in ceramics and sculpture are to be paid at the Corcoran School of Art.



175-76 **Design Projects (6-6)** The Staff  
Advanced problems in various areas. (Academic year—day and evening;  
summer 1965—Art 175 (3).)

179-80 **Sculpture II (6-6)** Warneke, Turano  
Advanced problems in modeling and direct carving. Material fee \*, \$10 a  
semester. (Academic year—day and evening; summer 1965—Art 179  
(3), Art 180 (3).)

183-84 **Advertising Design II (6-6)** Taney and Staff  
Problems in layout, letter form, illustration, photography, and type.  
(Academic year—day and evening.)

185-86 **Advertising Design III (6-6)** Taney and Staff  
Advanced problems with emphasis on page and small space advertisement.  
(Academic year—day and evening.)

189-90 **Sculpture III (6-6)** Warneke  
Advanced problems in sculpture as related to architecture. Material fee \*,  
\$10 a semester. (Academic year—day and evening; summer 1965—  
Art 189 (3), Art 190 (3).)

### THIRD GROUP†

251-52 **Ceramics IV (6-6)** Lafean, Hara  
Material fee \*, \$30 a semester. (Academic year—day and evening.)

253 **Ceramics V (6)** Lafean and Staff  
Material fee \*, \$30. (Fall and spring—day and evening.)

265-66 **Painting IV (6-6)** The Staff  
(Academic year—day and evening; summer 1965—Art 265 (3), Art  
266 (3).)

275 **Painting V (6)** The Staff  
(Fall and spring—as arranged; summer 1965—Art 275 (3).)

279-80 **Sculpture IV (6-6)** Warneke, Turano  
Material fee \*, \$10 a semester. (Academic year—as arranged; summer  
1965—Art 279 (3).)

281 **Sculpture V (6)** Warneke  
Material fee \*, \$10. (Fall and spring—as arranged; summer 1965—  
Art 281 (3).)

299-300 **Thesis (3-3)** The Staff  
(Academic year—as arranged; summer 1965.)

\* Material fees for courses in ceramics and sculpture are to be paid at the Corcoran School of Art.

† All third-group courses may be repeated for credit with the approval of the Department.

## Biochemistry

*Professor C. R. Treadwell (Chairman)*

*Professorial Lecturers* W. R. Carroll, Arthur Weissbach, Sidney Udenfriend, C. A. Kuether, W. W. Burr, Jr., R. W. Alberts, R. O. Brady, Jr., C. J. Epstein

*Associate Professors* B. W. Smith, G. V. Vahouny, J. M. Bailey

*Assistant Professor* A. S. Brecher

*Special Lecturers* Herbert Weissbach, Walter Mertz

- 221-22 **General Biochemistry (4-4)** Vahouny  
A lecture and laboratory course for nonmedical students. Prerequisite: Chemistry 152. Material fee, \$20 a semester. (Academic year—TTh 8-12 am.)
- 224 **Biochemistry of the Enzymes (1)** A. Weissbach  
Lecture course dealing with the biochemistry of the enzymes and enzyme reactions. Prerequisite: Biochemistry 221. (1966-67 and alternate years.)
- 225-26 **Biochemical Procedures (3-3)** Smith and Staff  
A laboratory course. Material fee, \$16 a semester. (Academic year—as arranged.)
- 227-28 **Biochemistry Seminar (1-1)** The Staff  
The current literature in the field of biochemistry, mainly for graduate students, but open to a limited number of specially qualified medical students. (Academic year—W 4 pm.)
- 232 **Proteins and Amino Acids (1)** Carroll  
A lecture course. Prerequisite: Biochemistry 221. (Spring—W 5 pm.)
- 241 **Isotopes (3)** Burr  
Theoretical characterization of isotopes and their applications in biology. Attention will be given to counting, health physics and radiation safety, autoradiography and chromatography. Laboratory fee, \$16. (Spring—S 8 am.)
- 249-50 **Introduction to Medical Research \* (3-3)** Bailey  
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—anatomical, statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, \$7.50 a semester. (Academic year—W 1-5 pm.)
- 252 **Biochemistry of the Brain (1)** Albers, Brady  
An elective course for medical students; open to a limited number of graduate students. Recent biochemical developments in structure, functions, and metabolic processes unique to the brain. (Spring—Th 1 pm.)
- 254 **Human Nutrition (1)** Pollack  
An elective course for medical students; open to a limited number of graduate students. Application of nutritional principles in humans. (Spring—Th 2 pm.)

\* This is an interdepartmental course. The student should register in the department directing his research.



- 256 Biochemistry of Organ Function (1)** **Kramer**  
 An elective course for medical students; open to a limited number of graduate students. Emphasis on biochemical processes unique to particular organ systems and the application of these processes to the evaluation of function. (Spring—Th 3 pm.)
- 258 Inherited Metabolic Diseases (1)** **Epstein**  
 A series of lectures on the contributions of molecular biology to the understanding of human mutations and hereditary diseases. Specific disease states and the genetics of protein structure will be discussed. Prerequisite: Biochemistry 222. (Spring—S 10 am.)
- 262 Biochemistry of the Lipids (1)** **Vahouny**  
 A lecture course. Prerequisite: Biochemistry 222. (Spring—Th 4 pm.)
- 264 Carbohydrate Metabolism (1)** **A. Weissbach**  
 A lecture course. Prerequisite: Biochemistry 222. (1965-66 and alternate years: spring—Th 5 pm.)
- 295-96 Research in Biochemistry (arr.)** **The Staff**  
 (Academic year—as arranged.)
- 299-300 Thesis (3-3)** **The Staff**

## Biological Sciences

*Professors* I. B. Hansen (*Chairman*), Edith Mortensen, S. C. Munson, A. H. Desmond, R. B. Stevens, R. L. Weintraub  
*Professorial Lecturers* K. C. Kates, L. B. Smith  
*Associate Professors* J. M. Kaper (*Research*), Caroline Adams, Kittie Parker (*Visiting*), D. S. Douglas  
*Associate Professorial Lecturers* J. R. Buchheit, J. G. Palmer, R. S. Sigafos, R. N. Stewart, W. A. Shropshire, Jr., H. M. Cathey  
*Assistant Professors* B. J. Leach, S. O. Schiff  
*Assistant Professorial Lecturers* M. M. Margulies, F. B. Abeles, A. J. Tousimis, D. L. Correll  
*Instructors (part-time)* Jean Morton, Dorothy Hoelzer, Bernice Radovich

## BIOLOGY \*

### FIRST GROUP

- 1-2 Introductory Biology \* (4-4)** **The Staff**  
 Lecture (2 hours), laboratory (4 hours). This course is designed to provide the nonscience student with an understanding of the life sciences and to serve as a basis for those who may wish to continue in some aspect of biology. It is the introductory course leading to all second- and third-group courses in biology, botany, and zoology. Material fee, \$10 a semester. (Academic year—day and evening; summer 1965.)

\* Biological Sciences 1-2 is prerequisite to all second-group courses in Biology, Botany, and Zoology, except by permission of the instructor.

## SECOND GROUP\*

- 108 **Organic Evolution** (3) Munson  
Theories of organic evolution and present ideas on the principal lines of development in the plant and animal kingdoms; review of the contributions to an understanding of the mechanisms involved in the process. (1965-66: spring—day; 1966-67: spring—evening.)
- 112 **Bacteriology** (4) Weintraub  
Lecture (2 hours), laboratory (3 hours). An introduction to the structure, activities, biological roles, and industrial uses of bacteria and some related organisms. Prerequisite: one year of chemistry. Material fee, \$11. (Spring—day.)
- 115-16 **Cytology** (3-3) Schiff  
Lecture (1 hour), laboratory (4 hours). The morphological and physiochemical properties of plant and animal cells and their components. Preparation of material for study. Prerequisite: one year of chemistry and two years of biological sciences. Material fee, \$11 a semester. (Academic year—day.)
- 119 **Introduction to Cell Physiology** (4) Weintraub, Kaper  
(Formerly Botany 139 or Zoology 139)  
Lecture (2 hours), laboratory (3 hours). An introduction to the structure and chemistry of the generalized cell of plants, animals, and microorganisms. Prerequisite: Chemistry 11-12 or permission of the instructor. Material fee, \$11. (Fall—day and evening.)
- 120 **Cell Physiology** (4) Weintraub, Shropshire  
(Formerly Botany 140 or Zoology 140)  
Lecture (2 hours), laboratory (3 hours). A study of cell processes including absorption, excretion, growth, division, contraction, conduction, locomotion, and photosynthesis. Prerequisite: Biological Sciences 119 or permission of the instructor. Material fee, \$11. (Spring—day and evening.)
- 127 **Genetics** (3) Stewart  
An introductory lecture course, dealing with both nuclear and nonnuclear organisms, covering the nature, transmission, and functioning of the genetic material. (Fall—evening; summer 1965.)
- 171-72 **Undergraduate Research** (arr.) The Staff  
Admission by permission of the staff member concerned. (Academic year—as arranged.)

## THIRD GROUP

- 201 **Seminar: Cytology** (3)  
A study of the current literature in experimental cytology. (Not offered 1965-66.)
- 206 **Seminar: Radiation Biology** (3) Schiff  
Actions of different kinds of radiation on living material, with special emphasis on effects of radiation on cells and cell parts. (Spring—evening.)
- 207 **Seminar: the Origin of Life** (3) Weintraub  
(1965-66 and alternate years: fall—evening.)

\* Biological Sciences 1-2 is prerequisite to all second-group courses in Biology, Botany, and Zoology, except by permission of the instructor.



- 295-96 **Research** (arr.) The Staff  
Investigation of special problems. (Academic year—as arranged; summer 1965.)
- 299-300 **Thesis** (3-3) The Staff  
(Academic year—as arranged; summer 1965).

## BOTANY

### SECOND GROUP\*

- 105 **Field Botany—Seed Plants** (3) Parker  
Lecture (1 hour), laboratory and field (4 hours). A course primarily for nonspecialists, emphasizing local flora. (1965 and alternate summers.)
- 106 **Field Botany—Lower Plants** (3) Adams  
(Formerly Botany 104)  
Lecture (1 hour), laboratory and field (4 hours). A course, primarily for nonspecialists, emphasizing algae, mosses, and ferns. (1966 and alternate summers.)
- 109-10 **Plant Morphology** (3-3) Adams  
Lecture (2 hours), laboratory (2 hours). Material fee, \$8 a semester. (1965-66 and alternate years: academic year—day.)
- 113 **Plant Microtechnique** (3) Adams  
Lecture (1 hour), laboratory (4 hours). An introduction to techniques and problems involved in the preparation of botanical materials for morphological examination. Material fee, \$11. (1966-67 and alternate years.)
- 125-26 **Plant Taxonomy** (3-3) Parker  
Lecture (1 hour), laboratory and field (4 hours). (1965-66 and alternate years: academic year—evening.)
- 131-32 **Mycology** (3-3) Stevens  
Lecture (2 hours), laboratory (2 hours). Material fee, \$8 a semester. (1966-67 and alternate years.)
- 133-34 **Plant Pathology** (3-3) Stevens  
Lecture (2 hours), laboratory (2 hours). Material fee, \$8 a semester. (1965-66 and alternate years: academic year—evening.)
- 135-36 **Plant Physiology** (4-4)  
Lecture (2 hours), laboratory (3 hours). Prerequisite: cell physiology or permission of the instructor. Material fee, \$11 a semester. (1965-66 and alternate years: academic year—evening; 1966-67 and alternate years: academic year—day.)
- 141-42 **Plant Ecology** (3-3) Sigafos  
Lecture (1 hour), laboratory and field (4 hours). (1966-67 and alternate years.)
- 171-72 **Undergraduate Research** (arr.) The Staff  
Admission by permission of the staff member concerned. (Academic year—as arranged.)

\* Biological Sciences 1-2 is prerequisite to all second-group courses in Biology, Botany, and Zoology, except by permission of the instructor.

### THIRD GROUP

- |         |  |               |
|---------|--|---------------|
| 221     | <b>Seminar: Plant Taxonomy * (3)</b><br>(1966-67 and alternate years.)                                 | Parker, Smith |
| 232     | <b>Seminar: Mycology and Plant Pathology * (3)</b><br>(1965-66 and alternate years: spring-evening.)   | Stevens       |
| 235     | <b>Seminar: Plant Physiology * (3)</b><br>(1966-67 and alternate years.)                               | Cathey        |
| 239     | <b>Seminar: Plant Metabolism * (3)</b><br>(1965-66 and alternate years: fall-evening.)                 | Correll       |
| 242     | <b>Seminar: Plant Ecology * (3)</b><br>(1965-66 and alternate years: spring-evening.)                  | Sigafoos      |
| 252     | <b>Seminar: Plant Virology * (2)</b><br>(1966-67 and alternate years.)                                 | Kaper         |
| 295-96  | <b>Research (arr.)</b><br>Investigation of special problems. (Academic year—as arranged; summer 1965.) | The Staff     |
| 299-300 | <b>Thesis (3-3)</b><br>(Academic year—as arranged; summer 1965.)                                       | The Staff     |

### ZOOLOGY

#### SECOND GROUP†

- |       |   |           |
|-------|---|-----------|
| 101-2 | <b>Invertebrate Zoology (3-3)</b><br>Lecture (1 hour), laboratory (4 hours). A systematic study of invertebrate forms, including the morphology, physiology, classification, life histories, and phylogenetic relationships. Material fee, \$11 a semester. (1965-66: academic year—day; 1966-67: academic year—evening.)   | Mortensen |
| 103-4 | <b>Comparative Vertebrate Anatomy (3-3)</b><br>Lecture (1 hour), laboratory (4 hours). Lectures on the organ systems of the vertebrates, laboratory dissections of types. Material fee, \$11 a semester. (1965-66: academic year—day; 1966-67: academic year—day and evening; summer 1965.)   | Leach     |
| 143   | <b>Animal Ecology (3)</b><br>Lecture (2 hours), laboratory (3 hours). Laboratory fee, \$8. (Fall—day.)  |           |
| 145   | <b>Introduction to Vertebrate Embryology (3)</b><br>Lecture (1 hour), laboratory (4 hours). Origin and early development of the individual, formation of organ systems. Emphasis on the frog, chick, and pig, with reference to the human embryo. Material fee, \$8. (1965-66 and alternate years: fall—evening, spring—day; 1966-67 and alternate years: fall and spring—day.) | Hansen    |

\* This seminar may be repeated once for credit.

† Biological Sciences 1-2 is prerequisite to all second-group courses in Biology, Botany, and Zoology, except by permission of the instructor.



- 148 **Histology (3)** Desmond  
Lecture (1 hour), laboratory (4 hours). Introduction to the microscopical anatomy of normal tissues and organs. Material fee, \$8. (1965-66 and alternate years: fall—day, spring—evening; 1966-67 and alternate years: fall and spring—day; summer 1965.)
- 152 **Protozoa (3)** Mortensen  
Lecture (1 hour), laboratory (4 hours). Introduction to the protozoa: classification, life histories, and physiology, with special emphasis on free-living types. Material fee, \$8. (1965-66 and alternate years: spring—evening.)
- 155 **Parasitology (3)** Kates  
Lecture (1 hour), laboratory (4 hours). An introduction to the study of animal parasitology, with a survey of parasitic types from the protozoa through arthropods. Material fee, \$11. (1965-66 and alternate years: fall—evening.)
- 157 **Comparative Endocrinology (3)** Leach  
A study of the endocrine systems of the vertebrate classes. Differences and similarities between endocrine mechanisms of fish, amphibians, reptiles, birds, and mammals will be included to illustrate broad trends of evolution in endocrine systems. (Fall—day.)
- 161 **Entomology (3)** Munson  
Lecture (1 hour), laboratory (4 hours). A study of the elementary morphology, physiology, and ecology of insects, with an introduction to the taxonomy of the more important groups. Material fee, \$8. (1965-66 and alternate years: fall—day.)
- 162 **Insect Physiology (3)** Munson  
Lectures and laboratory work on the physiology of insects. Admission by permission of the instructor. Material fee, \$8. (1965-66 and alternate years: spring—day.)
- 163 **Introduction to Human Physiology (3)** Douglas  
Similar to the former Physiology 115. Lectures on the fundamentals of physiology in its various subdivisions. (Fall—day.)
- 164 **Comparative Physiology (4)** Douglas  
Lectures and laboratory upon the principles of physiology with emphasis upon the vertebrates. (Spring—day.)
- 167 **Radiation Biology (3)** Schiff  
(Fall—day.)
- 171-72 **Undergraduate Research (arr.)** The Staff  
Admission by permission of the staff member concerned. (Academic year—as arranged.)
- 199-200 **Proseminar (3-3)** The Staff  
Designed to correlate and supplement the work of Zoology majors. (Offered last time: academic year 1965-66—day and evening.)

### THIRD GROUP

- 204 **Seminar: Invertebrate Zoology (3)** Mortensen  
A study of original publications on hormones of invertebrate animals. (1966-67 and alternate years: spring—evening.)

- 222 **Seminar: Vertebrate Reproduction (3)** Leach  
Lectures and class reports on the endocrinology of reproduction. The primary emphasis will be placed on recent literature and unsolved problems pertaining to this subject. (1965-66 and alternate years: spring—evening.)
- 224 **Seminar: Comparative Endocrinology (3)** Leach  
Lectures and class reports in endocrinology. Emphasis upon recent literature and unsolved problems in the field of comparative vertebrate endocrinology. (1966-67 and alternate years: spring—day.)
- 247 **Morphogenesis (3)** Hansen  
Lectures and class reports on experimental morphology, with emphasis upon early embryonic development. Prerequisite: Biological Sciences 103-4 or the equivalent. (1966-67 and alternate years: fall—evening.)
- 250 **Seminar: Regeneration (3)** Hansen  
Discussions and class reports upon the theories and experimental evidence in both vertebrate and invertebrate animals. (1966-67 and alternate years: spring—evening.)
- 251 **Seminar: Vertebrate Zoology (3)** Desmond  
A study of current publications in the field of histophysiology. (1965-66 and alternate years: fall—evening.)
- 271-72 **Biophysical Methods (3-3)** Tousimis  
A lecture course on the methods of biophysics including discussion of the application of centrifugation, electrophoresis, radiation electron microscopy, X-ray analysis, and the electron probe to a variety of problems. (Academic year—day.)
- 295-96 **Research (arr.)** The Staff  
Investigation of special problems. (Academic year—as arranged; summer 1965.)
- 299-300 **Thesis (3-3)** The Staff  
(Academic year—as arranged; summer 1965.)

## Biology

### Botany

See "Biological Sciences"

## Business Administration

### Business and Public Administration

See "Government and Business."



## Chemistry

*Professors* B. D. Van Evera, S. N. Wrenn, C. R. Naeser (*Chairman*), R. C. Vincent, \*R. E. Wood, T. P. Perros, W. E. Schmidt, D. G. White, J. B. Levy

*Associate Professorial Lecturer* Abraham Schwebel

*Assistant Professors* Margaret Ethier, D. H. Eargle, Jr., Nicolae Filipescu, Bette Barton, F. L. Minn

*Registration.*—Before completing registration each student must obtain from the representative of the Department an assignment to lecture, recitation, and laboratory sections.

### FIRST GROUP

#### 3-4 Fundamentals of Physical Science (4-4) Schmidt, Ethier

A year course: credit is not given for the first half until the second half is completed. Lecture (3 hours), laboratory (3 hours). Selected topics from chemistry, physics, astronomy, and geology are integrated to introduce the nonscience major to the basic methods and achievements of physical science. Laboratory fee, \$11 a semester. (Academic year—day.)

#### 11-12 General Chemistry (4-4) The Staff

A year course: credit is not given for the first half until the second half is completed. Lecture (3 hours), laboratory (3 hours), recitation (1 hour). Elementary course in general chemistry. Prerequisite: one year of high school algebra. Laboratory fee, \$18 a semester. (First half: fall—day and evening; summer 1965. Second half: spring—day evening; summer 1965.)

#### 13-14 General Chemistry (4-4) White

A year course: credit is not given for the first half until the second half is completed. Lecture (3 hours), laboratory (3 hours), recitation (1 hour). A terminal course in general chemistry for students in the School of Engineering and Applied Science. Prerequisite: Physics 1-2; Mathematics 21 or 27. Laboratory fee, \$18 a semester. (Academic year—day and evening.)

#### 15 General Chemistry (accelerated) (4) Naeser

Lecture (3 hours), laboratory (3 hours), recitation (1 hour). An intensive one semester course in general chemistry. Prerequisite: high school chemistry accompanied by laboratory work and a satisfactory grade on either the College Entrance Examination Board Achievement Test in Chemistry or on the placement examination given by the Department of Chemistry prior to registration, and high school physics. Laboratory fee, \$13. (Fall—day.)

#### 21 Qualitative Inorganic Analysis (4) Vincent

Lecture (2 hours), laboratory (6 hours). Theoretical and practical study of methods of separating and identifying the more common cations and anions using semi-micro techniques. Prerequisite: Chemistry 12 or 15, or a placement examination which may be waived at the discretion of the instructor. Laboratory fee, \$18. (Fall—day and evening; spring—day; summer 1965.)

#### 22 Elementary Quantitative Analysis (4) Schmidt

Lecture (2 hours), laboratory (6 hours). Theory and practice of quantitative analysis by classical volumetric and gravimetric methods and introduc-

\* On sabbatical leave spring semester 1965-66.

tion to instrumental analysis. Prerequisite: Chemistry 12, 14, or 15. Laboratory fee, \$18. (Fall—day; spring—day and evening; summer 1965.)

## SECOND GROUP

### 111 Physical Chemistry (3)

Wood

Gas laws, chemical thermodynamics, solution chemistry, chemical equilibria, and other topics are introduced. Prerequisite: Chemistry 22; Mathematics 22; Physics 1-2 or former 13, 14, or 15. (Fall—day and evening; summer 1965.)

### 112 Physical Chemistry (3)

Wood

Chemical kinetics, chemical statistics, electrochemistry, and other topics are introduced. Prerequisite: Chemistry 111. (Spring—day and evening; summer 1965.)

### 113 Physical Chemistry Laboratory (2)

The Staff

The laboratory complement of Chemistry 111; previous satisfactory completion of or concurrent registration for Chemistry 111 is required. Laboratory fee, \$18. (Fall—day and evening; summer 1965.)

### 116 Physicochemical Measurements (3)

The Staff

The integrated laboratory work associated with Chemistry 112 and 122; principles and applications of physicochemical methods and instruments to problems in chemical thermodynamics and kinetics and in structural and analytical chemistry. Prerequisite: Chemistry 111, 113. Prerequisite or concurrent registration: Chemistry 112, 122. Laboratory fee, \$18. (Spring—day and evening.)

### 122 Instrumental Analysis Lectures (2)

Schmidt

Theory of instrumental methods in qualitative and quantitative analysis, determination of structure, and study of reaction mechanisms with emphasis on electroanalysis, spectrophotometry, and chromatography. Correlated with laboratory course: Chemistry 116. Prerequisite: Chemistry 22, 111, 113. Concurrent registration: Chemistry 112, 116. (Spring—day and evening.)

### 134 Descriptive Inorganic Chemistry (3)

Naeser

An intermediate level course emphasizing the descriptive chemistry of the elements. Prerequisite: Chemistry 22, 151, 111. (Spring—day.)

### 135-36 Inorganic Chemistry: Preparations (2-2)

Perros

Application of the technique of inorganic chemistry to the preparation and purification of a list of selected substances. Prerequisite: Chemistry 152. Prerequisite or concurrent registration: Chemistry 134. Laboratory fee, \$18 a semester. (First half: fall—evening; spring—day. Second half: fall—evening.)

### 151-52 Organic Chemistry (4-5)

Wrenn, Barton

A year course: credit is not given for the first half until the second half is completed. Chemistry of the compounds of carbon. Prerequisite: Chemistry 12 or 14 or 15 and high school physics or Physics 1. Laboratory fee: Chemistry 151, \$12; Chemistry 152, \$20. (First half: fall—lecture (3 hours), laboratory (3 hours), day and evening; summer 1965. Second half: spring—lecture (3 hours), laboratory (6 hours), day and evening; summer 1965.)



**153 Special Laboratory in Organic Chemistry (1)** Wrenn, Barton

A course designed to give the chemistry major additional and broader training in the technique of organic chemistry than is obtained in Chemistry 151-52. Prerequisite or concurrent registration: Chemistry 22, 152. Laboratory fee, \$12. (Chemistry 155 may be substituted for this course.) (Spring—day and evening.)

**155 Organic Chemistry: Preparations (2 or 3)** Wrenn

Synthesis of organic compounds and application of the technique of organic chemistry to the preparation of pure compounds, using larger amounts and greater refinements than in Chemistry 151-52. Prerequisite: Chemistry 22, 152. Laboratory fee, \$10.50 a semester hour. (Spring—evening.)

**156 Qualitative Organic Analysis (3)** Wrenn

Lecture (1 hour), laboratory (6 hours). Identification of pure organic compounds, separation of mixtures, and identification of their components. Required of all students planning thesis work in organic chemistry. Prerequisite: Chemistry 22, 152. Laboratory fee, \$18. (Fall—evening.)

**191 History of Chemistry (2)** Perros

Historical development of chemistry. Prerequisite: Chemistry 22, 152. (1965-66 and alternate years: fall—evening.)

**193 Chemical Literature (1)** Wrenn

A general course in chemical literature with reference work and reports. Prerequisite: Chemistry 22, 152. Prerequisite or concurrent registration: Chemistry 111, 112. (Fall—evening.)

**THIRD GROUP**

**203 Chemical Kinetics (2)** Wood

The rates of chemical reactions and the factors influencing them. Prerequisite: Chemistry 112. (1965-66 and alternate years: spring—evening.)

**211-12 Physical Chemistry (2-1)** Wood

Same as Chemistry 111 and 112. Admission only by departmental permission. Credit will be assigned only upon the satisfactory completion of Chemistry 213. (Academic year—day and evening.)

**213 Chemical Thermodynamics (3)** Wood

Application of thermodynamics to chemical problems. Thermochemistry, homogeneous and heterogeneous equilibria, statistical calculation of thermodynamic properties, electrochemistry. Prerequisite: (1) grade A or B in Chemistry 111 and 112, or (2) B (satisfactory) in Chemistry 211-12, or (3) qualifying grade in physical chemistry qualifying examination. (Fall—evening.)

**215 Quantum Chemistry (2)** Minn  
(Fall—evening.)

**216 Statistical Mechanics as Applied to Chemistry (3)** Barton

An introduction to classical and quantum statistics designed to acquaint the student with the basic principles and application of the method. Prerequisite or concurrent registration: Chemistry 213 or permission of instructor. (1966-67 and alternate years.)

- 217 Chemical Bonding (2)** **Barton**  
A survey of modern developments in the theory of valence with emphasis on application to problems of stability and structure of complex molecules. Prerequisite: Chemistry 213 or permission of instructor. (1966-67 and alternate years.)
- 219-20 Spectrochemistry I-II (3-3)** **Filipescu**  
A study of the energetic states of molecules under the influence of electromagnetic radiation leading to photochemical reactions or to spectroscopic phenomena. Prerequisite to Chemistry 219: Chemistry 112 and 221. Prerequisite to Chemistry 220: Chemistry 112 and 152. (1966-67 and alternate years.)
- 221-22 Advanced Analytical Chemistry \* (2 or 3-2 or 3)** **Eargle, Schmidt**  
Lecture (2 hours,) laboratory (3 hours—optional). *First half:* theory and application of recent spectrometric methods of analysis including electrical magnetic, and optical instrumentation. *Second half:* theory and application of electroanalysis, radioanalysis, and separations by physicochemical methods. Prerequisite: Chemistry 22, 122, and qualifying examination. The lectures may be taken for 2 credits a semester without laboratory work, either half may be taken first. Laboratory fee, \$11 a semester. (*First half:* fall—evening. *Second half:* not offered 1965-66.)
- 231-32 Special Topics in Inorganic Chemistry (2-2)** **White, Perros**  
A series of one-semester courses covering such topics as (1) chemistry of the less familiar elements, (2) organometallic, organosilicon, and carbonyl compounds, and (3) co-ordination chemistry. Prerequisite: Chemistry 134 or 235. (Academic year—evening.)
- 234 Radiochemistry (2)** **Schwebel**  
The preparation, properties, and uses of radioactive isotopes, both natural and artificial. Prerequisite: Chemistry 235-36. (1966-67 and alternate years.)
- 235-36 Advanced Inorganic Chemistry \* (3-2)** **White**  
Application of modern chemical theories to inorganic substances and reactions, followed by a detailed study, developed from the periodic table, of the chemistry of the more common elements. Prerequisite: Chemistry 112 and 151 and qualifying examination. (Academic year—evening.)
- 251-52 Advanced Organic Chemistry \* (3-3)** **Filipescu**  
Synthesis, reactions, and properties of carbon compounds; fundamental theories of organic chemistry. Prerequisite: Chemistry 152 and qualifying examination. Prerequisite or concurrent registration: Chemistry 111, 112. (Academic year—evening.)
- 253 Advanced Synthetic Organic Chemistry \* (3)** **Wrenn**  
Study of reactions employed in the synthesis of organic compounds. Prerequisite: Chemistry 251. (Spring—evening.)
- 257 Theoretical Organic Chemistry (3)**  
Survey of modern theories of organic chemistry with emphasis on reaction mechanisms. Prerequisite: Chemistry 252. (1965-66 and alternate years: spring—evening.)
- 259-60 Polymer Chemistry (3)** **Filipescu**  
A study of the preparation, properties, and structure of macromolecules. Prerequisite: Chemistry 112 and 152. (1965-66 and alternate years: academic year—evening.)

\* The appropriate qualifying examination is prerequisite to all "advanced" courses.



- 291-92 **Seminar: Recent Developments in Chemistry (1-1)** The Staff  
(Academic year—day.)
- 295-96 **Research (arr.)** The Staff  
Research on problems approved by the Staff. Open to qualified students with advanced training. Laboratory fee, \$7.50 a semester hour. (Academic year—as arranged; summer 1965.)
- 299-300 **Thesis (3-3)** The Staff  
Laboratory fee, \$18 a semester. (Academic year—as arranged; summer 1965.)

## Chinese

See "Slavic and Oriental Languages and Literatures."

## Classical Languages and Literatures

*Professor J. F. Latimer (Chairman)*

*Associate Professorial Lecturer Sylvia Gerber*

*Assistant Professorial Lecturers A. B. Seidman, Mary Norton, Dorothea Wender*

*Instructor (part-time) D. B. Beers*

### LATIN AND GREEK

#### FIRST GROUP

- 1-2 **First-year Latin (3-3)** The Staff  
A year course: credit is not given for the first half until the second half is completed. Functional presentation of the essentials of the language, with appropriate reading selections; development of English derivatives; introduction to Roman life and literature. (Academic year—day; summer 1965.)
- 3-4 **Second-year Latin (3-3)** Norton  
A year course: credit is not given for the first half until the second half is completed. A continuation of the first-year course, but with increased emphasis on Latin readings which illustrate Roman life and literature; continuation of vocabulary building in English. Prerequisite: Latin 1-2 or two years of high school Latin. (Academic year—day.)
- 11-12 **First-year Greek (3-3)** Beers  
A year course: credit is not given for the first half until the second half is completed. Essentials of grammar with appropriate reading selections. (1966-67 and alternate years.)

**13-14 Second-year Greek (3-3)**

Latimer

A year course: credit is not given for the first half until the second half is completed. Review of grammar; rapid reading from selected Greek authors. Prerequisite: Greek 11-12. (1965-66 and alternate years: academic year—day.)

**SECOND GROUP**

**101-2 Introduction to Latin Prose and Poetry (3-3)**

Norton

Selections from various Latin authors: Nepos, Caesar, Cicero, Sallust, Livy, Catullus, Virgil, Horace, etc., to cover the broad sweep of Roman literature. Prerequisite: Latin 3-4 or the equivalent. (Academic year—day.)

**103-4 Roman Comedy (3-3)**

The Staff

Selected plays from Plautus and Terence. Prerequisite: Latin 101-2 or permission of the instructor. (1966-67 and alternate years.)

**105 Latin Correspondence and Composition (3)**

Norton

Selections from the letters of Cicero and Pliny for rapid reading. Latin prose composition based on the reading selections. Prerequisite: Latin 101-2 or permission of the instructor. (Summer 1965.)

**107 Homer (3)**

Selections from the Illiad and Odyssey for rapid reading. Prerequisite: Greek 3-4 or the equivalent. (1966-67 and alternate years.)

**108 Greek Historians (3)**

Selections from Herodotus and Thucydides for rapid reading. Prerequisite: Greek 3-4 or the equivalent. (1966-67 and alternate years.)

**111-12 Roman History and Philosophy (3-3)**

Latimer

Selections from Cicero, Sallust, Lucretius, and Livy. Prerequisite: Latin 101-2 or permission of the instructor. (1966-67 and alternate years.)

**121-22 Roman Lyric Poetry and Satire (3-3)**

Latimer

Selections from Catullus, Horace, Juvenal, and Martial. Prerequisite: Latin 101-2 or permission of the instructor. (Academic year—day.)

**131-32 Latin Prose Composition (1-1)**

Exercises in Latin prose composition for Latin majors. Other students may enroll by permission of the instructor. (Academic year—day.)

**COURSES IN ENGLISH TRANSLATION**

**FIRST GROUP**

**71-72 Greek and Roman Backgrounds in Literature (3-3)**

Latimer

Selected Greek and Roman masterpieces and their literary influence. *First half:* Greek and Roman epic. *Second half:* selections from Plato and Cicero. (*First half:* spring—day. *Second half:* fall—day.)

**SECOND GROUP**

**109 Greek and Roman Drama (3)**

Wender

Selected tragedies of Aeschylus, Sophocles, Euripides, and Seneca; selected comedies of Aristophanes and Menander, Plautus and Terence; historical development of classical drama. (Fall—day; summer 1965.)



- 114 **Latin and Greek Satirical Writings (3)** Wender  
Selections from Horace, Juvenal, Martial, and Lucian. (Spring—day.)

## CLASSICAL HEBREW

### FIRST GROUP

- 21-22 **First-year Classical Hebrew (3-3)** Seidman  
A year course: credit is not given for the first half until the second half is completed. Fundamental principles of the language with practice in reading simple narrative prose. (Academic year—day.)
- 23-24 **Second-year Classical Hebrew (3-3)** Seidman  
A year course: credit is not given for the first half until the second half is completed. Review of grammar and exegesis of selected passages from the Hebrew text of the Old Testament. (Academic year—day.)

## RELATED COURSES IN OTHER DEPARTMENTS

- Art 101 *Greek and Roman Architecture* (3)  
Art 102 *Greek and Roman Sculpture* (3)  
Art 111 *Classical Archeology* (3)  
Education 141 *Teaching Latin* (3)  
Philosophy 111 *History of Philosophy* (3)

## Economics

*Professors* A. E. Burns, D. S. Watson, T. W. Holland, J. W. Kendrick,  
W. E. Schmidt (*Chairman*), C. T. Stewart, Jr. (*Research*), C. E.  
Galbreath, Joseph Aschheim, R. P. Sharkey

*Professorial Lecturers* R. E. Moor, Henry Solomon

*Associate Professors* Mary Holman (*Research*), \*Murray Brown

*Associate Professorial Lecturers* R. L. Sammons, D. L. Edwards, Henry  
Solomon, M. A. Gomez, Paul Gekker, S. E. Haber

*Assistant Professors* Ching-Yao Hsieh, S. J. Hunter, William Long,  
Vito Tanzi, Henry Peskin

### FIRST GROUP

- 1-2 **Principles of Economics † (3-3)** The Staff  
Lecture (2 hours), recitation (1 hour). Survey of the major economic principles, institutions, and problems in contemporary life. Economics 1 is prerequisite to Economics 2. (First half: fall and spring—day and evening; summer 1965. Second half: fall—evening; spring—day and evening; summer 1965.)

\* On leave of absence 1965-66.

† Economics 1-2 is prerequisite to all other courses in Economics.

## SECOND GROUP

- 101-2 Economic Analysis (3-3)** **The Staff**  
 Analysis of demand, supply, and pricing; theory of national income determination. (*First half: fall—day and evening; spring—evening; summer 1965. Second half: fall—day; spring—day and evening; summer 1965.*)
- 104 History of Economic Thought (3)** **Hsieh**  
 History of the major schools of economic thought; influence of changing problems on the development of economic theory. (*Spring—day*)
- 105 Business Cycles (3)**  
 Description and analysis of the facts of economic instability, survey of recent business cycle theory, forecasting, and consideration of counter-cyclical policies. (*Fall—evening.*)
- 121 Money and Banking (3)** **Hunter**  
 Theory of money, credit, and banking; commercial banking and the Federal Reserve System; other financial institutions; international aspects of money; current financial problems. (*Fall—day and evening; spring—evening; summer 1965.*)
- 123 Monetary Theory and Policy (3)** **Hunter**  
 Principal contemporary theories, background of recent monetary policy. (*Spring—day.*)
- 133 The Economy of the Soviet Union (3)** **Gekker**  
 Development and main features of the economic life of the Soviet Union. (See History 145-46 and Geography 166.) May be taken for graduate credit with the approval of the instructor. (*Fall—evening.*)
- 141 Unionism and Collective Bargaining (3)** **Holland**  
 The development and characteristics of American unionism and collective bargaining as economic and social institutions, appraisal of economic and social aspects, public policies and controls. (*Fall—day.*)
- 142 Labor Economics (3)** **Holland**  
 Characteristics of the American labor force, operations of labor markets, wage theories and practices, impact of collective bargaining, causes and characteristics of unemployment, public policies and programs. (*Spring—day.*)
- 147 Economic History of Europe \* (3)** **Sharkey**  
 European economic development since the Middle Ages with particular emphasis on the period following the Industrial Revolution. The evolution of capitalism and its varying impact upon the societies of Europe will be treated. (*Fall—evening.*)
- 161-62 Public Finance and Taxation (3-3)** **Tanzi**  
 General survey of government expenditures; sources and methods of taxation; economic effects of expenditures, taxes, and of government debt policies. (*Academic year—evening.*)
- 165 Government Control of Economic Activity (3)** **Long**  
 Changing role of government in promoting and regulating economic activity, types and spheres of control. (*Fall—day.*)

\* An interdepartmental course offered by the departments of Economics and History. Students may register in either department.



- 179-80 **Economic History of the United States \*** (3-3) Sharkey  
(Replaces former History 174)

An analysis of the process of economic growth in the United States from Colonial times to the present. The development of various sectors in the economy such as agriculture, transportation, manufacturing, and banking will be treated and their interdependence stressed. *First half:* 1607 to 1865. *Second half:* 1865 to the present. (Academic year—evening.)

- 181-82 **International Economics** (3-3) Aschheim, Schmidt

*First half:* survey of the theory of international trade, factor movements, and balance-of-payments adjustment. *Second half:* analysis of modern international economic problems including problems of less developed countries. (Academic year—day and evening.)

- 185-86 **Economic History and Problems of Latin America** (3-3) Gomez

Evolution of the economies of Latin America with particular emphasis on present structures and problems, considered in the regional, country, and sub-region contexts. Economics 185, special attention to Middle America; Economics 186, special attention to South America. (Academic year—evening.)

- 198 **Proseminar in Economics** (3)

Comprehensive survey of economics. Prerequisite: Economics 101-2 and 121. (Fall and spring—as arranged.)

### THIRD GROUP

- 201-2 **History and Literature of Economic Thought** (3-3) Burns

Critical analysis and interpretation of the development and the literature of economic thought, origins, and problems, of the major types of theory, and their relation to present problems and policies. (Academic year—evening.)

- 203-4 **Contemporary Price Theory** (3-3) Watson

The theory of relative prices from Marshall to the present. (Academic year—evening.)

- 205 **Theory of Employment and Income** (3) Hsieh

Determinants of the level of employment and income. Keynesian and classical systems contrasted, and recent literature on the subject. (Fall—evening.)

- 206 **Business Cycle Analysis** (3) Kendrick

Empirical analysis of American business cycles; evaluation of the methodology and findings of the National Bureau of Economic Research. Statistical tests of theories of the business cycle. (Spring—evening.)

- 208 **The National Income** (3) Kendrick

The theory of economic aggregates; measurement and policy aspects of national income. (Spring—evening.)

- 210 **Seminar in Economics** (3)

Methodology of economics, integration of economic theories, methods of research. Open only to students who have completed fifteen hours of graduate work in economics. (Academic year—evening.)

\* An interdepartmental course offered by the departments of Economics and History. Students may register in either department.

- 212 **Seminar: Price Theory (3)** Watson  
Advanced topics in the theory of relative prices. Prerequisite: Economics 203-4 or the equivalent. (Fall—evening.)
- 213 **Economic Thought in the 20th Century (3)** Burns  
Continuation of Economics 201-2. The principal trends in economic thought during the present century. (Not offered 1965-66.)
- 215-16 **Mathematical Economics (3-3)** Solomon  
Introduction to the uses of mathematics in economic theory. (Academic year—evening.)
- 217-18 **Survey of Economics (3-3)** Watson  
Survey of economic analysis and policy. Not open to graduate students in economics or economic policy. (Academic year—evening.)
- 221-22 **Monetary Theory (3-3)** Hunter  
Contemporary monetary theories. (Academic year—evening.)
- 223-24 **Monetary Policy and Central Banking (3-3)** Aschheim  
The money system in its relation to national income: monetary policies of the Federal Reserve and other central banking systems. (Academic year—evening.)
- 231-32 **Quantitative Economics (3-3)** Solomon  
Selected topics in quantitative economics. (Not offered 1965-66.)
- 241 **Unionism, Collective Bargaining, and Labor Economics (3)** Holland  
An accelerated introductory course in labor economics primarily for graduate students in Personnel Administration. (Fall—evening.)
- 244 **Problems in Unionism, Collective Bargaining, and Labor Economics (3)** Holland  
Concentrated study of selected economic, social, and legal aspects of labor relations and labor economics. (Spring—evening.)
- 246 **Foreign Labor Movements (3)** Holland  
Labor in the economic, social, and political structures of selected foreign countries. Contrasts and comparisons with the United States. (Spring—evening.)
- 247 **Labor Relations in the Federal Service (3)** Holland  
Admission by permission of the instructor. (Fall and spring—evening.)
- 248 **Institutional Economics (3)** Holland  
(Fall—evening.)
- 251-52 **Economic Development (3-3)** Schmidt, Galbreath  
The theories and problems of economic growth with special attention to the underdeveloped countries. (Academic year—evening.)
- 253 **Productivity Analysis (3)** Kendrick  
Concepts and measures of productivity; relations to economic growth and to structural changes in the American economy. (Fall—evening.)



- 261-62 **Public Finance and Fiscal Policy (3-3)** Moor  
Special problems in contemporary public finance and fiscal policy. (Academic year—evening.)
- 263-64 **Theory of Public Finance (3-3)** The Staff  
Criteria for the allocation of government expenditures, principles of taxation, fiscal policy for stable growth. (Academic year—evening.)
- 265-66 **Theory of Economic Policy (3-3)** Stewart  
The nature, forms, methods, and objectives of economic policy; the relation of economic theory to economic policy. (Academic year—evening.)
- 267 **The Soviet Economy (3)** Gekker  
Development of the Soviet-type economy; organization, policies, and problems; monetary, fiscal, production, allocative, foreign trade, economic growth. (See also History 145-46, 345-46, and Geography 166.) (Spring—evening.)
- 275 **Econometrics I: Introduction to Econometric Studies \* (3)** Brown  
Survey of econometrics. (Fall—evening.)
- 276 **Econometrics II: Econometric Methods \* (3)** Brown  
Development of the methods of econometrics. Prerequisite: differential and integral calculus, matrix theory, Economics 275. (Spring—evening.)
- 277 **Econometrics III: Advanced Topics in Econometrics \* (3)** Brown  
The analysis of econometric techniques. Prerequisite: Economics 275 and mathematical economics. (Spring—evening.)
- 278 **Econometrics IV: Seminar in Econometrics \* (3)** Brown  
A research seminar. Prerequisite: Economics 275, 276, 277. (Fall—evening.)
- 281-82 **International Economics (3-3)** Schmidt  
*First half:* the theory of international trade and factor movements. *Second half:* the theory of balance-of-payments adjustment. (Academic year—evening.)
- 284 **United States Foreign Economic Policy (3)** Schmidt  
Analysis of foreign aid program; international, commercial, and monetary policy of the United States; United States and international economic organization. (Fall—evening.)
- 285-86 **Economic Development of Latin America (3-3)** Gomez  
Current policies and programs, capital formation, public and private; foreign loans and investment; social and technological preconditions of investment. (Academic year—evening.)
- 290 **Seminar: International Economics (3)** Schmidt  
Advanced topics in international economics. Prerequisite: Economics 281-82 or the equivalent. (1965-66 and alternate years: spring—evening.)
- 299-300 **Thesis (3-3)** The Staff  
(Academic year—as arranged; summer 1965.)

\* An interdepartmental course offered by the departments of Economics and Statistics. Students may register in either department.

#### FOURTH GROUP\*

379-80 **Reading Course in Economic History** † (3-3)  
(Academic year—evening.)

Sharkey

### Education

*Professors* B. S. Root (*Chairman*), G. L. Angel, W. T. Carroll, F. N. Hamblin, Carol St. Cyr, W. A. McCauley, Perry Botwin, J. T. Dailey (*Research*)

*Professorial Lecturers* Madaline Remmlein, H. O. Johnson, Anthony Marinaccio, J. B. Holden, J. P. Walsh, D. D. Darland, J. C. Lang, J. F. Rogers, H. M. Wilson, Roy Edelfelt, H. H. Kempfer, F. E. Wellmann, Ruth Newman, M. H. Fouracre, Bertice Cornish, Jean Ervin

*Associate Professors* Mary Coleman, H. G. Detwiler, R. E. Baker, Martha Rashid, R. W. Eller, J. W. Suber, S. R. Westerlund, Leonard Nadler

*Associate Professorial Lecturers* LuVerne Walker, Eugenia Nowlin, Beverly Crump, Helen Mitchell, C. O. McDaniels, W. E. Amos, Marcella Bernstein, N. J. Long, Irene Hypps, Christine Kehne, Katherine Scrivener

*Assistant Professors* J. G. Boswell, Margaret McIntyre, R. L. Williams, Joanne Parker, Gloria Horrworth, C. A. Neyman (*Research*), M. G. Van Dyke

*Assistant Professorial Lecturers* R. J. Kubalak, Clarke Trundle, Shirley McCune, David Iwamoto, F. W. Kovacs, Amelia Carew, J. D. Gates, Helen Jacoby

*Instructor* Margaret Moss

#### FIELD STUDIES

*Director* M. H. Jessup, *Assistant Director* J. F. Lobuts

#### FIELD SERVICE COORDINATORS

Mary Maré, *Assistant Principal, Dean of Girls, Wakefield High School, Arlington, Va.*; C. M. Richmond, *Principal, Stratford Junior High School, Arlington, Va.*

#### READING CENTER

##### A Reading Clinic

Coleman and Staff

Diagnosis of reading difficulties; individual or group lessons without academic credit. Fee: for individual diagnosis, \$45; for individual instruction,

\* Fourth-group courses are limited to graduate students; but they are primarily for doctoral candidates.

† An interdepartmental course offered by the departments of Economics and History. Students may register in either department.

Students who plan to register for this reading course should confer with the individual instructor as early as possible in the semester prior to enrollment, in order to receive the approval of the instructor and to reserve space in the course; students should also arrange with the instructor to receive reading lists, instructions, and advance assignments.



\$6 a lesson; for semi-individual instruction, \$5 a lesson; for instruction in small groups with common reading difficulties, \$3.75.

## **B Reading Improvement**

Coleman and Staff

Classes, without academic credit, are offered for students on the high school, college, and college graduate levels. Students are grouped according to needs, and emphasis is placed on comprehension, vocabulary, study skills, spelling, and speed as needed. Fee: for full-time students currently registered in the University, \$45 a semester; for other clients, \$75 for twenty class periods. (Fall and spring—day and evening; summer 1965.)

## **SECOND GROUP**

### **108 Human Development, Learning, and Teaching (3)**

McIntyre, McCune, Horrworth

Lecture (2 hours), conference (1 hour), field work (2 hours). For the general student as well as the prospective teacher. Principles of effective teaching based on an understanding of human development and the nature of learning. Prerequisite: Psychology 22 or 121. (Fall and spring—day and evening; summer 1965.)

### **111 Curriculum and Methods in the Elementary School (12 to 15)**

McIntyre and Staff

For seniors in the elementary school curriculum. Methods, materials, appraisal, and field experiences in elementary schools. Problems and procedures in teaching arithmetic and science, art, the language arts (including reading, literature for children, oral and written expression, spelling, and handwriting), music, physical education, and social studies. Planning units of work, general classroom procedures, and evaluation of pupil progress. Observation and participation two mornings a week. Prerequisite: Education 108 and 123. (Fall—day.)

### **112 Educational Measurement (3)**

Westerlund, Williams

Scope, needs, services to students, selection and construction of teacher-made tests, interpretation of tests for evidence purposes. Prerequisite: Education 108 and 123. (Fall and spring—day and evening; summer 1965 (McCauley).)

### **113 Elementary School Art (3)**

Crump, Nowlin

For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22, or 121. Material fee, \$4.50. (Fall and spring: lecture and laboratory (3 hours)—evening, field work—as arranged; summer 1965.)

### **114 Elementary School Music (3)**

Mitchell

For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22, or 121. (Fall and spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1965.)

### **115 Teaching of Reading in the Elementary School \* (3)**

Parker

A basic course in methods, techniques, materials, and activities essential to a good elementary school reading program. Prerequisite: Education 108 and 123, or teaching experience. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1965.)

### **116 Social Studies in the Elementary School \* (3)**

Trundle

Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123, or teaching experience.

\* See (\*) footnote on page 60.

(Fall: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1965.)

**117 Science in the Elementary School \* (3) St. Cyr**

Content, methods, materials, and activities, essential in the elementary school curriculum. Prerequisite: Education 108 and 123, or teaching experience. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1965.)

**120 Mathematics in the Elementary School \* (3) St. Cyr**

Content, methods, materials, concepts of "new mathematics," and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123, or teaching experience. (Fall: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1965.)

**123 Society and the School (3) St. Cyr and Staff**

Lecture (2 hours), conference (1 hour), field work (2 hours). For the general student as well as the prospective teacher. Historical and social development of education at local, national, and international levels; co-operation of the school with other community agencies; functions of school personnel. (Fall and spring—day and evening; summer 1965 (Boswell).)

**128 Children's Literature (3) Walker**

Exploring and evaluating the newer books for children and the children's classics, understanding the contribution of literature in child development, appreciating children's original expressions. Prerequisite: Psychology 1 and 22. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1965 (McIntyre).)

**131 Principles and Methods of Secondary School Teaching (3) Boswell, Myers, Stallings**

For seniors in the secondary school curriculum. Course, unit, and lesson planning; practical techniques used in connection with motivation, the assignment, group procedures, directing study, individual differences, evaluation, clerical routines, disciplines, the homeroom, activity sponsorship, public relations. Prerequisite: Education 108 and 123. (Fall and spring—day.)

**134 Student Teaching in Secondary Schools (6 to 9) Boswell and Staff**

For seniors in the secondary school curriculum. Sections A, B, and C are for full-time academic majors. Section D is for physical education majors (Myers, Stallings). Student teaching fee, \$50. Admission by permission of the instructor. Prerequisite: Education 108 and 123. (134A: fall—as arranged; 134A, 134B, 134C, and 134D: spring—as arranged.)

**135 Student Teaching in Elementary Schools (9) McIntyre, Rashid**

For seniors in the elementary school curriculum. Student teaching fee, \$50. Admission by permission of the instructor. Prerequisite: Education 108 and 123. (Fall and spring—as arranged.)

**SPECIAL METHODS COURSES†**

To be elected in the senior year after substantial preparation in the teaching fields concerned by the students in the secondary school curriculum. Course requirements and hours of credit vary with license requirements. Practices of successful teachers are studied,

\* This course may not be taken by students who have completed or plan to enroll in Education 111.

† Prerequisite to all special methods courses: Education 108, 123, and 131. Additional prerequisites are stated under each course.

and actual teaching content as found in current texts and courses of study is reviewed.

- 136 **Teaching English in Secondary Schools** (2 to 4) Williams  
Prerequisite\*: 18 semester hours in English. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.)
- 137 **Teaching Speech** (2 to 4) Ervin  
Prerequisite\*: 18 semester hours in speech or the permission of the instructor. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.)
- 138 **Teaching Social Studies in Secondary Schools** (2 to 4) Boswell  
Prerequisite\*: 24 semester hours of social studies. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1965.)
- 139 **Teaching Art in Secondary Schools** (2 to 4) Crump  
Prerequisite\*: 24 semester hours of Art. (Spring: lecture (2 hours), laboratory (2 hours)—Saturday morning.)
- 140 **Teaching Mathematics in Secondary Schools** (2 to 4) Gates  
Prerequisite\*: Mathematics through calculus. (Spring—evening.)
- 141 **Teaching Latin \*** (3) Gerber  
Consideration of objectives in teaching Latin; construction of courses of study; techniques of motivation, presentation, and drill; areas of enrichment. Designed for both junior and senior high school teaching. (Summer 1965.)
- 142 **Teaching Music in Secondary Schools** (2 to 4)  
Prerequisite\*: 24 semester hours of Music. (Spring: lecture and laboratory to be arranged.)
- 144 **Teaching Science in Secondary Schools** (2 to 4) Eller  
Prerequisite\*: 24 to 40 semester hours of science. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.)
- 146 **Teaching Foreign Languages** (2 to 4) McSpadden  
Prerequisite\*: 18 semester hours of one foreign language. (Spring—day.)
- 150 **Teaching Business Subjects** (2 to 4) Kiley  
Prerequisite\*: 30 semester hours of business education. (Spring—S 9:10–11 am.)
- 161 **Management of the Hospital Nursing Unit** (3)  
Analysis of nursing today, the hospital, structure and changing functions, basic concepts of management, personnel practices and activities, interpersonal relationships, legal aspects and safety factors, economics—inventories, and evaluation procedures of the hospital nursing unit. (Offered through the College of General Studies.)
- 180 **Introduction to the Education of Exceptional Children** (3) Botwin and Staff  
A survey course to acquaint prospective teachers of the retarded with the various types and degrees of mental, physical, social, and emotional devia-

\* Prerequisite to all special methods courses: Education 108, 123, and 131. Additional prerequisites are stated under each course.



tions seen in the school population and to help them to accommodate such children in a school program. Prerequisite: Education 108 and 123, or the equivalent and permission of the adviser. (Fall—day; summer 1965.)

**181 Nature and Needs of Exceptional Children I—the Mentally Retarded (3)** **Fouracre**

Nature and needs of children with varying degrees of retardation. Causation and diagnosis of retardation and its psychological and sociological implications. Principles of learning with respect to teaching retarded children. Deviations of behavior in the mentally retarded. Prerequisite: Education 108 and 123, or the equivalent and permission of the adviser. (Fall—evening.)

**185 Teaching Younger Mentally Retarded Children (Nursery and Elementary School Age) (3)** **Cornish**

Educational methods and curriculum for the mentally retarded at different levels of maturity within the scope of the course. Organization and planning of instructional activities; selection and preparation of materials and equipment; community resources; records and reports; health and welfare services. Prerequisite: Education 180 and 181, or the equivalent and permission of the adviser. (Spring—day.)

**186 Teaching Older Mentally Retarded Children (Junior and Senior High School Age) (3)** **Botwin and Staff**

Methods and curriculum for the mentally retarded at different levels of maturity within the scope of the course. Organization and planning of instructional activities; selection and preparation of materials and equipment; community resources; records and reports; health and welfare services; occupational training; employment opportunities; job analyses; citizenship education. Prerequisite: Education 180 and 181, or the equivalent and permission of the adviser. (Spring—evening.)

**187 Education of the Emotionally Disturbed Child (3)** **Botwin and Staff**

Analysis of educational provisions for disturbed children including definitions, characteristics, identification, and programs for prevention and re-education. (Fall—day.)

**189 Practicum in Teaching Exceptional Children (6 to 9)** **Botwin and Staff**

Supervised student teaching in classrooms for exceptional children under the direction of a qualified teacher and the supervision of the University staff. Student teaching fee, \$50. A minimum of 150 clock hours is required for 6 semester hours of credit; 225, for 9 hours. Prerequisite: Education 180 and 181. (Fall and spring—as arranged.)

**THIRD GROUP\***

**201 Seminar: Foundations of Education (3)** **The Staff**

Designed to refresh previous study and to give additional depth of knowledge in the historical, philosophical, sociological, psychological, evaluation, measurement, and research foundations of education; and to guide study for the Master's degree comprehensive examination in these areas. (Fall and spring—evening.)

**203-4 Comparative Education (3-3)** **Kempfer**

Comparison of foreign educational systems with those of the United States, particularly those of Russia, West Germany, Denmark, Switzerland, France, the British Isles, Canada, and Australia. (Academic year—evening.)

\* A degree from an accredited institution is prerequisite to all third-group courses.

- 205-6 **The Curriculum \* (3-3)** St. Cyr  
For experienced teachers. *First half:* curriculum foundations and issues; comparison of curriculum patterns. *Second half:* principles and procedures in curriculum development; group consideration of student problems. (Academic year—Saturday morning.)
- 207 **Curriculum Materials \* (3)** St. Cyr  
For experienced teachers. Construction of courses of study, resource units, classroom teaching aids, and inexpensive materials; direct application to students' own situations. (Summer 1965.)
- 208 **Human Development, Learning, and Teaching (3)** Lang  
Lecture (2 hours), conference (1 hour), field work (2 hours). For graduate students. Principles of effective teaching based on an understanding of human growth and development and the nature of learning. Prerequisite: Psychology 1 and 22, or 121. (Fall and spring—evening.)
- 209 **Child Growth and Development (3)** Rashid  
An interdisciplinary approach to child development is emphasized. Special attention is given to the analysis, interpretation, and practical implications for instruction of significant research in the various disciplines which have contributed most to the knowledge of child development. (Fall—evening.)
- 210 **Adolescent Growth and Development (3)** Rashid  
An interdisciplinary approach to adolescent growth and development is emphasized. Particular attention is given to the analysis, interpretation, and practical implications for instruction of significant research in the various disciplines which have contributed most to the knowledge of the adolescent. (Spring—evening.)
- 212 **Educational Measurement (3)** McCauley  
Basic measurement techniques; construction, selection, administration, and interpretation of objective and essay-type examinations; statistical analysis of test results; laboratory experiences in the use of test instruments. (Fall—evening; summer 1965.)
- 213-14 **History of Education (3-3)** Williams  
*First half:* the European backgrounds of American education. *Second half:* the evolution of the American school system. (Academic year—evening.)
- 216 **Education of Slow-learning Children \* (3)** Amos  
Identification, nature, and needs of slow-learning elementary and junior high school children. Emphasis on diagnosis and treatment of learning difficulties. (Summer 1965.)
- 217-18 **Philosophy of Education \* (3-3)** Westerlund  
*First half:* designed to help students formulate a personal philosophy of education. *Second half:* social foundations of education—a study of the forces that shape the policies and offerings of the school. (Academic year—evening; summer 1965—Education 217 (3).)
- 219 **Elementary School Classroom Procedures \* (3)** Baker  
Current classroom practices with particular emphasis on ways of planning, unit teaching, techniques in discipline; individual and group evaluation techniques, resources for learning, providing for individual differences. (Not offered 1965-66.)

\* Prerequisite: adequate professional preparation.



- 221 **Early Childhood Education \* (3)** McIntyre  
The philosophy and principles underlying the teaching of four- to seven-year olds. Emphasis is on organization, equipment, methods, and materials for promoting the growth needs of young children. (Summer 1965.)
- 223-24 **Reading Problems \* (3-3)** Coleman  
For experienced teachers. Study of reading difficulties on elementary and secondary school levels; classroom and clinical procedures in solving reading problems. (Academic year—evening; summer 1965—Education 223 (3).)
- 226 **Reading in Secondary Schools (3)**  
For experienced teachers. Consideration of special problems in the content areas, diagnostic and corrective techniques and materials for the classroom teacher, reading improvement programs. (Spring—evening.)
- 227 **Basic Issues in Elementary Education (3)** Baker  
A consideration of basic issues in the purposes, organization, and conduct of elementary education. Emphasis on the philosophical and psychological roots of fundamental assumptions as they relate to classroom practices. (Fall—Saturday morning; summer 1965.)
- 228 **Instructional Areas in Elementary Education (3)** Baker  
Critical appraisal of the objectives, organization, content, and teaching methods in the language arts, arithmetic, social studies, science, arts and crafts, health and physical education. (Spring—Saturday morning.)
- 229 **Administration of Elementary Education (3)** Carroll  
For experienced teachers and administrators. Administration as a means of achieving instructional objectives, organizing learning and teaching activities, handling supplies and equipment, maintaining the building, and integrating school and community life. Emphasis upon guide lines to action. (Fall—evening; summer 1965.)
- 231 **Secondary School Classroom Procedures \* (3)** Suber  
Survey of current classroom practices with particular attention to selected topics such as teacher-pupil planning, group procedures, pupil security, initiatory and culminating activities, individual and group evaluation techniques, teaching aids, etc.; review of recent literature. (Summer 1965.)
- 233 **Audio-visual Education \* (3)** Kubalak  
Lecture (2 hours), laboratory (1 hour). Role of audio-visual materials in learning; selection, evaluation, and use of materials; administrative problems in the care, operation, maintenance, and use of audio-visual materials and equipment. Material fee, \$7. (Spring—Saturday morning; summer 1965.)
- 241 **Education of the Gifted \* (3)** Amos  
For classroom teachers. Nature and discovery of giftedness, provisions for the gifted in regular classes, experimental projects. (Spring—evening; summer 1965.)
- 243 **Human Relations in the Classroom \* (3)** Marinaccio  
Principles and practices involved in interpersonal relationships between learner and teacher and among learners. (Summer 1965.)

\* Prerequisite: adequate professional preparation.



- 244 **Tests and Measurements for Exceptional Children** (3) Botwin and Staff  
Materials and methods of psychological, psychometric, and educational tests used in diagnosing and securing information concerning exceptional children. Prerequisite: Education 185 and 186 or the equivalent, or permission of the adviser. (Summer 1965.)
- 245 **School and Community** \* (3) Angel  
The school as an important member of a team of social agencies that builds the community. (Fall and spring—evening; summer 1965 (Williams).)
- 246 **Guidance and Counseling of the Mentally Retarded** (3) Cornish  
Educational, mental, social, and vocational guidance of mentally retarded children. The role of the teacher in parent counseling. Community agencies involved in post-school rehabilitation, guidance, and recreational services for the mentally retarded. Prerequisite: Education 185 and 186 or the equivalent, or permission of the adviser. (Summer 1965.)
- 247 **Vocational Education** \* (3) Walsh  
Development in the United States; current conceptions, agencies involved, problems, and trends. (Not offered 1965-66.)
- 248 **Student Personnel Work with College Groups** (3) Kirkbride  
The principles and procedures of personnel work with campus groups. The promotion, limitation, and coordination of campus group activities and the development of student leadership. (Spring—evening.)
- 249-50 **Practicum in Student Personnel Work** \* (1 to 3-1 to 3) Carew  
Supervised practical experience in student personnel services. Admission by permission of the instructor. (Academic year—as arranged.)
- 251 **Guidance in Elementary and Secondary Schools** \* (3) Detwiler  
A survey course: scope; needs; organization of the program; services to students, the instructional staff, and the administration; personnel needed for the program. (Fall and spring—evening; summer 1965.)
- 252 **Organization and Administration of Guidance Services** (3) Suber  
Designed for guidance directors and supervisors and experienced school counselors who hope to qualify for such positions in the near future. Prerequisite: a minimum of 15 semester hours of approved graduate work in measurement and guidance. (Spring—evening.)
- 253 **Analysis of the Individual for Purposes of Counseling** (3) Detwiler  
A detailed study of individual analysis techniques with practice in handling such methods. Prerequisite: Education 112 or the equivalent. (Fall and spring—evening; summer 1965 (McCauley).)
- 254 **The Junior High School** \* (3) Williams  
Purposes, organization, core program, guidance, developing course of study, extra-classroom activities. (Spring—evening.)
- 255-56 **Secondary Education** \* (3-3) Root  
*First half:* current proposals for the improvement of secondary education. *Second half:* current problems in each of the subject-matter fields. (Academic year—evening; summer 1965 (Root, Suber).)

\* Prerequisite: adequate professional preparation.

- 257 **Occupational and Educational Information (3)** Detwiler  
Designed to acquaint vocational and educational counselors with the basic occupational and educational information necessary in counseling. Sources of data and techniques of collecting, analyzing, and disseminating for purposes of guidance. (Fall and spring—evening; summer 1965.)
- 258 **Techniques of Counseling (3)** McCauley  
An intensive study of the educational and psychological processes involved in counseling interviews. Specific types of vocational, educational, and personal counseling problems are discussed. Prerequisite: 12 semester hours in testing and guidance, including Education 253 and 257. In exceptional cases Education 253 or 257 may be taken concurrently with 258. (Fall and spring—evening; summer 1965.)
- 259-60 **Secondary School Management \* (3-3)** Johnson  
For experienced teachers and administrators with two years of successful teaching in secondary schools. Management planning, execution, and control; criteria of good management; construction of the master schedule; leadership problems incident to the development of new policies and programs. (Academic year—evening.)
- 261-62 **Practicum in Guidance (3-3)** Detwiler  
Supervised practical instruction in school guidance. Prerequisite: graduate work in counseling. Admission by permission of the Chairman of the Department. (Academic year—as arranged.)
- 263-64 **Employee Training (3-3)** Walsh  
*First half:* nature and purpose, review of major programs—orientation, supervisory, apprentice, clerical skills, communication. *Second half:* administrative problems and practices, training media, coordination with other management functions. Prerequisite: adequate professional preparation or two years of experience in employee training. (Academic year—evening.)
- 265-66 **Teaching Secondary School English—Materials, Resources, Content (3-3)** Williams  
A refresher course for teachers of English. Discussion of new approaches to course content. Offered in cooperation with the departments of English and Speech. *First half:* communication skills—structural linguistics, composition, and speech. *Second half:* American and English literature. (Academic year—evening.)
- 267-68 **Teaching Secondary School Social Studies—Materials, Resources, Content (3-3)** Williams  
A refresher course for teachers of the social studies. Discussion of new approaches to course content. Offered in cooperation with the departments of History, Political Science, Geography and Regional Science, Economics, Anthropology, and Sociology. (Not offered 1965-66.)
- 269-70 **Business Management of Schools I-II \* (3-3)** Carroll  
*First half:* Philosophy, responsibilities, and functions of the business management office in public education institutions; responsibilities of boards of education, superintendents, and central office staffs. *Second half:* planning and financing; building utilization, operation, and maintenance; transportation; lunchrooms; purchasing, storing, distribution; accounting and budgetary procedures; depreciation, insurance, and bond issues. (Not offered 1965-66.)

\* Prerequisite: adequate professional preparation.



- 271 **The Teacher and School Administration \* (3)** Suber, Carroll  
A survey course for teachers and prospective administrators. Education and world affairs, national agencies, role of the state, local administration, school finance, legal controls, school plant, public support, democratic administrative procedures, improving teaching conditions. (Fall—Saturday morning; spring—evening; summer 1965.)
- 272 **The Teacher and School Supervision \* (3)** Carroll, Suber  
Nature, organization, human relationships, and techniques. (Fall—evening; spring—Saturday morning; summer 1965.)
- 273-74 **Teacher Education \* (3-3)** Darland  
*First half:* aims, objectives, and basic issues; study of outstanding and experimental programs. *Second half:* recruitment and selection, general education, teaching-field preparation, professional sequences, laboratory experiences. (Academic year—evening.)
- 275 **School Finance \* (3)** Carroll  
Educational financial theory, practice, and control, including methods of financing. (Fall—evening.)
- 276 **Seminar: Public Relations in School Administration \* (3)** Carroll  
Purposes, gathering materials, disseminating agencies, publicity media, public participation in policy making. (Spring—evening.)
- 278 **School Law \* (3)**  
Sources and scope of school law; legal rights and responsibilities of teachers, pupils, and taxpayers. Other legal problems of major interest to the group. (Spring—evening.)
- 279-80 **Adult Education \* (3-3)** Holden  
*First half:* current concepts and objectives, agencies involved, programs on all levels—international through community. *Second half:* the adult as a learner, the teacher of adults, learning-teaching activities, administration of adult education programs. (Academic year—evening; summer 1965—Education 279 (3).)
- 281 **Seminar: the Educational System of the Soviet Union (3)**  
(Fall—evening.)
- 282 **Seminar: the Educational System of Communist China (3)**  
(Spring—evening.)
- 283-84 **Higher Education \* (3-3)** Rogers  
*First half:* development, present status, and outlook for American colleges; purposes of higher education, current and projected programs; trends in curriculum, instruction, administration, and evaluation of outcomes. *Second half:* principles in development of college programs; study of curricula in liberal arts and professional fields; relationship of institutional services and facilities to the instructional program. (Academic year—evening.)
- 285 **Student Activities \* (3)** Suber  
Nature and purposes of selected activities—homeroom, clubs, assemblies, school publications, student council, interscholastic contest; particular attention to sponsorship, participation, finance, and evaluation. (Summer 1965.)

\* Prerequisite: adequate professional preparation.



- 286 Introduction to Student Personnel Work (3)** Kirkbride  
A basic survey course of student personnel services in American higher education. Personnel work as an integral part of the college program of instruction is stressed, with an introduction being given to the literature of the field. (Fall—evening.)
- 287-88 Clinical Study of Reading Problems \* (3-3)** Coleman  
For advanced students. Diagnostic and corrective work under supervision of the Reading Center. Each student is expected to diagnose and treat pupils who are retarded in reading. Case studies are presented and criticized. Prerequisite: Education 223-24 or the equivalent. Material fee, \$5 a semester. (Academic year—evening.)
- 289 Supervisory Problems in Reading \* (3)** Coleman  
For experienced teachers, principals, supervisors, and superintendents. Problems involved in planning, reorganizing, and improving the total reading program, in promoting cooperative effort on the part of the staff toward increasing teaching efficiency. (Not offered 1965-66.)
- 291 Planning the School Plant (3)** Suber  
Selection of sites; evaluation of existing buildings; utilization of present facilities; adaptation to curricular needs; building, operation, and maintenance problems. (Not offered 1965-66.)
- 293-94 Research (3-3)** The Staff  
Individual research under the guidance of a member of the staff. Program and conferences arranged with an instructor. (Academic year—as arranged; summer 1965.)
- 295 Educational Research Methods and Procedures (3)** McCauley, Westerlund  
Required of all candidates for graduate degrees in Education. To be taken early in the student's graduate program. Prerequisite: an elementary course in statistics. (Fall and spring—day and evening; summer 1965.)
- 296 Seminar: Educational Research (3)** McCauley  
Designed to help students analyze scientific approaches to problems in education; evaluate the application of research techniques to typical problems; define, organize, and conduct research studies; and prepare proposals for sponsored research. Required of all candidates for the Doctor of Education degree and open, with permission, to candidates for other advanced degrees. Prerequisite: Education 295 or the equivalent. (Spring—evening.)
- 297 Personnel Administration (3)** Carroll  
(Formerly Education 277)  
Organization and administration of personnel programs for educational institutions. Basic philosophy, principles, responsibilities, and functions (Fall—evening; summer 1965—offered as Education 277 (3).)
- 298 Seminar: Personnel Administration (3)** Carroll  
Research: policies, rules and regulations, staff organizations, negotiations. (Spring—evening.)
- 299-300 Thesis (3-3)** The Staff  
Required of all Master of Arts in Education candidates writing Master's theses. (Academic year—as arranged; summer 1965.)

\* Prerequisite: adequate professional preparation.

- 313 **Cultural Deprivation and Mental Health as They Relate to Emotionally Disturbed Children (3)** Botwin and Staff  
Mental health problems affecting the culturally deprived child's vocational, educational, and emotional needs; teacher-child relationships; language differences in various socioeconomic environments. (Spring—evening.)
- 314 **Etiology and Treatment of Emotional Disturbances (3)** Botwin and Staff  
Through the discipline of psychiatry to better understand the causes for and treatment of emotional disturbance and social maladjustment. (Spring—day.)
- 315 **Seminar: Emotional Disturbance (3)** Botwin and Staff  
Includes trends in research, community attitudes, institutional care, readings, and various schools of thought on educational philosophy and techniques. (Spring—day.)
- 321 **Psychology of Exceptional Children (3)** Botwin and Staff  
Consideration of basic psychological problems and research pertaining to handicapped children with emphasis on the study of social, emotional, physical, and learning characteristics of the various types of handicapping conditions. (Spring—day.)
- 322 **Problems and Issues in Mental Retardation (3)** Botwin and Staff  
Problems in identification, diagnosis, and placement; emphasis on problems involved in providing education and social control; and teaching methodology as well as equipment and supplies. (Fall—day.)
- 323 **Administration and Supervision of Special Education (3)** Botwin and Staff  
Philosophy and nature of special education; program organization, administration, and development. Surveying local level needs; program evaluation and supervision. (Not offered 1965-66.)
- 324 **Recent Research and Trends in Mental Retardation (3)** Botwin and Staff  
Definitions, theories, classifications; social, medical, psychological, and educational rehabilitation measures. Emphasis on current contributions of biology, sociology, and psychology to educational theory and practice. (Spring—evening.)
- 355 **Group Counseling Practicum (3)** The Staff  
A study of the peer group relationships with particular reference to adolescent groups. Principles of group dynamics as related to the interaction within groups. Techniques and practice in group counseling. For experienced counselors and psychologists. (Fall—Saturday morning.)
- 356 **Seminar: Guidance and the Disciplines (3)** The Staff  
Exploring the foundations of guidance through the disciplines of psychology, sociology, economics, anthropology, and philosophy. For experienced counselors. (Spring—Saturday morning.)
- 379 **Practicum in Adult Education (3)** Nadler  
(Fall—as arranged.)

#### FOURTH GROUP

A Master's degree from an accredited institution is prerequisite to all fourth-group courses. All of the seminars listed in the fourth group are

open to doctoral candidates or to other post-Master's degree students with the approval of the instructor. Study is individually planned on the basis of previous study and experience in the subject field to attain an advanced level of competence and meet identified professional needs or field requirements in a doctoral program.

- |        |  |                |
|--------|--|----------------|
| 401-2  | <b>Seminar: History of Education (3-3)</b><br>(Academic year—as arranged; summer 1965.)  | Williams       |
| 403-4  | <b>Seminar: Philosophy of Education (3-3)</b><br>(Academic year—as arranged; summer 1965.)   | Westerlund     |
| 405-6  | <b>Seminar: Human Growth and Development (3-3)</b><br>(Academic year—as arranged; summer 1965.)  | Rashid         |
| 411-12 | <b>Seminar: Elementary Education (3-3)</b><br>(Academic year—as arranged; summer 1965.)  | Baker          |
| 413-14 | <b>Seminar: Secondary Education (3-3)</b><br>(Academic year—as arranged; summer 1965.)   | Root           |
| 421-22 | <b>Seminar: Adult Education (3-3)</b><br>(Academic year—as arranged; summer 1965.)   | Detwiler       |
| 423-24 | <b>Seminar: Higher Education (3-3)</b><br>(Academic year—as arranged; summer 1965.)  |                |
| 425-26 | <b>Seminar: Teacher Education (3-3)</b><br>(Academic year—as arranged; summer 1965.)   | Baker          |
| 427-28 | <b>Seminar: Employee Training (3-3)</b><br>(Academic year—as arranged; summer 1965.)   | Root           |
| 431-32 | <b>Seminar: Administration (3-3)</b><br>(Academic year—as arranged; summer 1965.)  | Carroll, Suber |
| 433-34 | <b>Seminar: Supervision (3-3)</b><br>(Academic year—as arranged; summer 1965.)   | Carroll, Suber |
| 435-36 | <b>Seminar: Elementary Administration (3-3)</b><br>(Academic year—as arranged; summer 1965.)   | Carroll        |
| 437-38 | <b>Seminar: Secondary Administration (3-3)</b><br>(Academic year—as arranged; summer 1965.)  | Suber          |
| 441-42 | <b>Seminar: Curriculum (3-3)</b><br>(Academic year—as arranged; summer 1965.)  | St. Cyr        |
| 443-44 | <b>Seminar: Guidance and Counseling (3-3)</b><br>(Academic year—as arranged; summer 1965.)   | Detwiler       |
| 445-46 | <b>Seminar: Research and Evaluation (3-3)</b><br>(Academic year—as arranged; summer 1965.)   | McCauley       |
| 451-52 | <b>Seminar: Special Education (3-3)</b><br>(Academic year—as arranged; summer 1965.)   | Botwin         |
| 491-92 | <b>Dissertation (3-3)</b><br>Preparation of a research design, research, and writing of an approved doctoral dissertation under the direction of a major adviser and dissertation committee. (Academic year—as arranged; summer 1965.) | The Staff      |



**OFFERED IN AFFILIATION WITH THE WASHINGTON SCHOOL OF PSYCHIATRY**

The following Education courses, offered by the Washington School of Psychiatry in affiliation with The George Washington University, are available to graduate students in the School of Education and to qualified students in the Division of University Students. The Staff of the Washington School of Psychiatry will conduct these courses at the School of Psychiatry, 1610 New Hampshire Avenue, NW., Washington, D. C.

- 234 **Communication Skills for Teachers and Principals (3)** Bernstein  
The life-space interview in the school setting between the teacher and the child or the principal and the child; the planned interview between the teacher and the parent or the principal and the parent. (Summer 1965.)
- 235 **Role of the Teacher in the Changing Community (3)**  
Racial, ethnic, and social class population shifts and accompanying problems of housing, health, and public safety, with emphasis on the human relations and mental health aspects of the current situation; supports, techniques, and resources available to educators. (Fall and spring—evening.)
- 236 **Emotional Factors in Learning (3)** Hypps  
For counselors and guidance staff, principals, special education teachers, pupil personnel workers. Problems of guidance derived from divergent or pathological motivational patterns in the child or family. Class limited to 25 students. (Fall and spring—evening.)
- 237 **Emotional Problems Confronting the Teacher (3)** Kehne  
The teacher's relationship with other teachers, the administration, the school system, and pupils; techniques of interviewing and dealing with parents, members of the school staff, and the community. (Fall and spring—evening.)
- 238 **Seminar: Learning Problems and Disabilities (3)**  
Emotional learning blocks, socioeconomic disadvantages, brain damage and hyperactivity, psychosomatic symptoms and health questions affecting learning, curriculum planning and its relation to mental health and learning growth, communication and motivation. (Spring—evening.)
- 239 **Educational Problems of the Urban Child (2)**  
Mental health problems affecting the urban child's vocational, educational, and emotional needs; teacher-child relationship, language differences in various socioeconomic environments. Curriculum planning. (Fall and spring—evening.)
- 240 **Techniques of Interviewing for Teachers and School Staff (3)**  
An intensive study of specific interview techniques and requisite skills. Specific problems encountered by teachers and staff will be discussed. (Fall and spring—evening.)

## Engineering and Applied Science

*Professors* C.H. Walther, M.A. Mason, P.A. Crafton, Louis de Pian, N.T. Grisamore, H.E. Smith, Robert Heller, \*M.S. Ojalvo, G.M. Arkilic, A.M. Rothrock, Frederick Tischer

*Adjunct Professors* L.A. Guildner, A.G. McNish, G.U. Sorger, Churchill Eisenhart, Theodore Young, F.K. Harris, D.P. Johnson

*Professorial Lecturers* Ezra Glaser, Francis Washer, J.L. Intermaggio, R.J. Wilson, George Furukawa, Leon Horn

*Associate Professors* John Kaye, A.C. Murdaugh, R.R. Fox, R.E. Cronin, L.H. Glassman, R.L. Dedrick, J.L. Jenkins, J.C. Wootton

*Associate Professorial Lecturers* Chester Peterson, D.H. Cook, L.S. Rotolo, Milton Gussow, Victor Selman, J.P. Fennell, Alfred Blumstein, Michael Gaus, Irving Korobkin, Gershon Kulin, M.A. Leibowitz

*Assistant Professors* E.H. Braun, †A.C. Meltzer, B.I. Hyman, T.G. Toridis, J.M. Raffel, Donald Gross

*Assistant Professorial Lecturers* P.H. Sawitz, Howard Eisner, D.C. Rohlf, T.B. Wiggins, John Jones, Jr., W.W. Balwanz, N.A. Sloan, R.W. Bublitz, R.S. Goodman

*Instructor* Nicholas Kyriakopoulos

*Instructors (part-time)* Donald Baechler, J.M. Cameron, E.R. Jacobsen, Stephen Nichols

## APPLIED SCIENCE

### UNDERGRADUATE

#### 5-6 **Finite Mathematics and Statistics in Science I-II (3-3)**

Statements, sets and functions, numbers systems, probability theory, linear algebra, convex sets, finite chains, basic statistical principles and methods, applications.

#### 7 **Science, Civilization, and Technology (2)**

Interrelation between growth of science, progress of civilization, and expansion of technology: historical review of research of planetary systems; factors controlling atmospheric and space flight and planetary launchings; tracking and communication; space science and applications; space program and national policy. Emphasis is on basic factors for understanding of impact of science and technology on social, political, economic growth of U.S. society and culture.

#### 10 **General Field Theory (3)**

General theory of fields, Laplace and Maxwell equations, conformal mapping, particle motion in fields, potential.

#### 11 **General Wave Theory (3)**

Basic wave mechanics; wave equations.

\* On sabbatical leave 1965-66.

† On leave of absence 1965-66.

- 12 **Electromagnetic Wave Theory (3)**  
Electromagnetic waves in bounded media, radiation, resonators, guides, microwaves.
- 29-30 **General Network Theory I-II (3-3)**  
Network theorems and functions, Laplace transform, Fourier integral, linear and nonlinear circuits, stability, matrices, domains.
- 32 **Network Analysis (3)**  
Solutions of equations using transformation calculus, poles and zeroes of network functions, correlation of domains, matrix representation, nonlinear circuit analysis.
- 50 **Information Theory (3)**  
Basic concepts in information theory, transmission of information, modulation systems, periodic sampling and pulse modulation, noise in transmission systems.
- 55 **Control Theory (3)**  
Theory of automatic control systems, steady-state and transient analysis, transfer functions, stability criteria.
- 58 **Analysis Methods (3)**  
Methods for analyzing problems; use of fundamental principles of mathematics, science, and engineering in problem analysis.
- 59-60 **Introductory Analytical Mechanics I-II (5-5)**  
Introduction to vector mechanics; statics and dynamics of particles, solids, and fluids; kinematics; behavior of solids and fluids acted upon by forces; Newton's Laws; concepts of stress and strain, with applications.
- 62 **Soil Mechanics (3)**  
Engineering properties of soils, lateral earth pressure, bearing capacity, foundation displacements, slopes stability.
- 63-64 **Fluid Mechanics I-II (3-3)**  
Characteristics and properties of fluids; basic laws of fluid motion; phenomenological laws; mathematical description of incompressible and compressible flows; concepts of potential, stream function, circulation, lift, drag; elements of boundary layer theory, turbulence, dimensional analysis; laboratory demonstrations and projects.
- 65-66 **System Dynamics I-II (3-3)**  
Dynamics of linear systems, analogies, transient and steady-state analysis, Lagrange's equations, Hamilton's principle, introduction to gyro dynamics.
- 70 **Earth Science (3)**  
Formation of and properties of soils and rock, climatology, hydrology, ground water and river flow, seismology.
- 71-72 **Mechanics of Deformable Solids I-II (3-3)**  
Introduction to the theories of elasticity, plasticity, and viscoelasticity; with applications in solid mechanics.
- 80 **Introductory Astronomy (3)**  
Coordinate systems and nomenclature, description of astronomic systems, stars, stellar physics, elementary celestial mechanics.
- 85 **Thermodynamics (5)**  
Theoretical study of fundamental concepts, first and second laws, equations



of state, entropy, phase mixtures, kinetic theory, transport phenomena, partition functions, and statistical thermodynamics.

**86 Energy Conversion (3)**

Concepts of thermodynamics pertaining to energy conversion. Study of cycles and entropy in energy conversion; solid state phenomena involved in conversion processes; energy forms, equations of state, and energy fields. Conversion methods using thermal cycles, thermoelectric devices, thermionic devices, magnetohydrodynamic generators, fuel cells, and photoelectric principles. Introduction to electromechanical energy converters and transducers. The concept of efficiency and losses in these systems.

**87 Heat Transfer Theory (3)**

Theoretical concepts of conduction, convection, radiation; field and potential theory applied to conduction.

**99 Intermediate Comprehensive Evaluation (0)**

Required of all students at the completion of the Introductory Level and prior to admission to the Intermediate Level. No academic credit; no fee.

**101-2 Materials Science I-II (4-4)**

Structure and properties of materials; mechanical behavior of solids. The atom, bonding, crystal structure, noncrystalline solids, phases, micro- and macro-structure, mechanical properties of solids, relation of structure to behavior, tests. Thermodynamics and kinetics of solids; electrical and magnetic properties. Thermodynamic analysis, reaction rates, diffusion, nucleation and growth, control of structure and properties, response to environment. Conduction, electrical and magnetic phenomena and their relation to structure, domain behavior, structure, insensitive properties.

**105-6 Fundamentals of Measurement Science I-II (4-4)**

Standards; measurements; error, accuracy, and precision; design of experiments.

**107 Statistics in Metrology (3)**

Qualitative and quantitative aspects of measurement, statistical methods, uncertainty and accuracy, corrections, sampling.

**110 Management Analysis (3)**

Emphasis on basic principles of management, forms of organization, standards used and the economies of industrial enterprise, management communications, management decision making.

**111 Operations Research (3)**

General decision-making aspects of operations research (OR). History and characteristics of OR; construction of mathematical models; the economic context of OR; forecasting; factors in decision making; decisions and their criteria under certainty, uncertainty, and competition.

**112 Quantitative Techniques (3)**

Operational methods and models for selected classes of problems, both deterministic and stochastic. Linear programs, inventory, replacement, and waiting-line problems are considered.

**121-22 Structural Theory I-II (4-4)**

Theory and analysis of behavior of structures, model analysis, numerical methods, matrix algebra methods, collapse methods.

**130 Electrical Energy Conversion (3)**

Fundamentals of electromechanical energy conversion, concepts of efficiency and losses, development of the equations of an ideal generalized machine from both the circuit theory and field theory approach, the generalized machine as a d-c machine and various a-c machines, 3-phase machines and electrical power systems.

**175 Digital Circuitry and Systems (3)**

Basic concepts of digital programmed computers, flow and control of information in the computer, number systems, coding and counting in digital computers. Introduction to logical design of combination and sequential logic circuits. The logic of arithmetic, central, memory, and input-output units. Study of typical binary and decimal digital computers. This is an advanced undergraduate course which may be taken for graduate credit.

**180 Measurement and Electronic Instrumentation \* (3)**

Principles of measurements using electronic equipment and instrumentation. Introduction to the fundamentals of electrical measurements. Use of electrical equipment to measure voltage, current, impedance, frequency, power, waveform, and time. Limitations of the equipment used in these measurements. Analysis of electronic systems for precise measurement. This course is designed for scientific personnel who have need for a knowledge of electronic measurements but have not had a formal course in electronics, and requires only elementary college physics and mathematics as preparation.

**198 Undergraduate Research (3)**

**199 Advanced Comprehensive Evaluation (0)**

Required of all students at the completion of the Intermediate Level and prior to admission to the Advanced Level. No academic credit; no fee.

**GRADUATE**

**201 Automatic Control I (3)**

Single and Multiple Loop systems; response of linear systems; stability—consideration, describing functions, optimum response, compensation.

**202 Automatic Control II (3)**

Sample-data systems, signal-flow graph, the Z-transform, modified Nyquist and Routh-Hurwitz criteria, Jury's test,  $n^{\text{th}}$  order hold, data reconstruction.

**203 Automatic Control III (3)**

Linear stability, nonlinear systems, phase portraits, Liapunoff stability, limit-cycles, closed-loop response, Gaussian input-functions, switching, Mathieu equation as stability criteria.

**211 Mathematical Methods in Applied Science I (3)**

Methods and theory of functions of complex variables and partial differential equations and their application. (May be taken concurrently with Ap S 212.)

**212 Mathematical Methods in Applied Science II (3)**

Methods and theory of tensor analysis, calculus of variations, and integral equations and their application. (May be taken concurrently with Ap S 211.)

**216 Advanced Dynamics (3)**

Dynamics of continuous mechanical systems; Lagrange's equations, Hamilton's principle, gyrostatics; operational methods.

\* No credit toward degree requirements for students in the School of Engineering and Applied Science.

- 217 **Analytical Mechanics (3)**  
Fundamental principles, generalized coordinates, variational principles and Lagrange's equations, nonholonomic systems, Hamilton's equations, theory of small oscillations.
- 218 **Mechanics of Orbits and Trajectories (3)**  
Celestial mechanics. Orbits and trajectories in force fields. Dynamics of space vehicles.
- 219 **Mechanics of Continuum (3)**  
Mechanics of elastic, plastic, and viscous solids, and of fluids; introduction to theory and formulation of basic equations.
- 220 **Nonlinear Mechanics (3)**  
Topological and analytical methods in nonlinear mechanics, nonlinear resonance, relaxation oscillations.
- 221 **Theory of Elasticity I (3)**  
General theory of elasticity for finite deformation, elastic potential and energy principles, stress-strain relations for isotropic media, theory of small deformations superimposed on finite deformations, infinite small theory of elasticity, applications.
- 222 **Theory of Elasticity II (3)**  
Theories of plane strain and generalized plane stress, stress-strain relations for orthotropic and transversely isotropic media, strain energy function for basic crystal classes, elastic waves, thermoelasticity.
- 223 **Celestial Mechanics (3)**  
General equations of motion, Lagrange's planetary equations, disturbing function, Delaunay and Poincaré variables, secular inequalities, lunar theory, precession and nutation.
- 227 **Experimental Stress Analysis (3)**  
Applications of the theory of elasticity in the analysis of strain and stress; theory and problems in measurement of static and dynamic strains; measurement of force, acceleration, and velocity.
- 228 **Photoelasticity and Photoplasticity (3)**  
Theory and problems in two- and three-dimensional photoelasticity; photoplasticity.
- 230 **Rheology (3)**  
Rheological behavior of fluids, plastic and viscoelastic solids; invariant equations of state; applications.
- 231-32 **Fluid Dynamics I-II (3-3)**  
Physical principles of fluid motion; including conservation laws, characteristics and properties of fluids, Navier-Stokes equations and some solutions; Prandtl-Taylor hypothesis and boundary layer theory, turbulence; compressible flow, including variable area, friction and heating effects, normal and oblique shock, sub-, trans-, and supersonic velocities.
- 233 **Problems in Applied Science (3)**  
Investigation of problems in engineering and applied science, emphasizing imaginative and systematic application of fundamental principles in engineering, physics, and mathematics.



- 238 **Theory of Dislocations (3)**  
Dislocations and plastic flow in crystals; continuously distributed dislocations; dislocation, torsion, and curvature tensors, their physical significance and applications.
- 241 **Science of Materials (3)**  
Structure as related to mechanical, magnetic, and electrical properties; dislocation theory; strengthening mechanisms in solids. Applied experimental procedures in X-ray diffraction, microradiography, transmission electron microscopy. Lecture and laboratory.
- 242 **Magnetohydrodynamics (3)**  
Study of the interaction of electromagnetic and fluid fields. Dynamics of conducting fluids in electromagnetic and magnetic fields.
- 250 **Analysis of Structures (3)**  
Classical and modern methods of analysis of statically indeterminate structures, including matrix analysis, variational methods, theory of plastic collapse.
- 252 **Theory of Structural Dynamics (3)**  
Analysis of elastic structures under various dynamic loadings, both steady-state and transient; including vibrations of rigid frames, plates, and thin shells.
- 254 **Selected Topics in Structural Mechanics (3)**  
Nonlinear deformations of structures, boundary value problems, thermal stresses, impact problems, and limit analysis of structures.
- 255 **Analysis of Plate Structures (3)**  
Bending and stretching of thin elastic plates under lateral and in plane loading with various boundary conditions, continuous plates and plates on elastic foundations; buckling of plates; theory of folded plate structure.
- 256 **Analysis of Shell Structures (3)**  
Theory of curved surfaces; general membrane theory, bending theory for shells of revolution; applications to specific shapes and loadings, pressure vessels, domes; buckling of shells.
- 259 **Nonlinear Mechanics of Continua (3)**  
Development of fundamental concepts of nonlinear media and their applications.
- 260 **Theory of Plates and Shells (3)**  
Theories of finite deformations of plates, complex variable methods, Reissner's theory of bending of electropic plates, general bending theory of shells, theory of shallow shells, boundary value problems.
- 261 **Theory of Plasticity (3)**  
Introduction to mathematical theory of plasticity; tensor invariants, theory of conditions of compatibility, constitutive equations, characteristic surfaces for perfectly plastic solids; applications.
- 262 **Theory of Structural Stability (3)**  
General criteria for stability; buckling of elastic, plastic, and viscoelastic columns, beams, plates, and shells; variational and numerical methods.
- 263 **Field Analysis and Potential Theory (3)**  
A general study of the theory of potentials including those used to facilitate

the solution of problems in electromagnetic theory, mechanics, thermodynamics, and gravitation.

- 264 **Electrodynamics (3)**  
Presence of moving matter in electromagnetic fields, force and energy in moving systems, relativistic concepts, tensors.
- 265 **Electromagnetic Waves (3)**  
Electromagnetic waves in bounded media, radiation from antennas, high-frequency transmission lines, cavity resonators, and microwave devices.
- 266 **Electromagnetic Wave Propagation (3)**  
Ground waves; space-wave propagation, atmospheric effects, ionosphere; maximum usable frequency; bandwidth.
- 267-68 **Advanced Network Analysis I-II (3-3)**  
Matrix algebra and topology, network theorems, correlation of time and frequency domains, network functions, Hilbert transforms, positive real functions, quadratic forms, realizability of network functions, signal-flow graphs, spectrum analysis, filter theory.
- 269-70 **Linear Network Synthesis I-II (3-3)**  
Positive real functions, realizability conditions, synthesis of driving-point functions, synthesis of transfer functions, active network synthesis, approximation problem.
- 271 **Active Network Theory (3)**  
Analysis of three-terminal networks, matrix representation, reciprocity, stability, passivity-activity, feedback, oscillators. Unified theory for all linear three-terminal networks, including vacuum tube and transistor circuits.
- 273-74 **Communication Theory I-II (3-3)**  
Frequency analysis of signals using Fourier Series and integral, frequency spectra, response of ideal filters, bandwidth and rise time, signal processing, modulation processes, cross- and auto-correlation theory, filtering and prediction of random signals, separation of signals from noise.
- 275-76 **Physical Electronics I-II (3-3)**  
Physical principles underlying the operation of various electronic devices using quantum mechanics and solid-state physics—study of insulators, dielectrics, semiconductors, conductors and magnetic materials; devices studied include vacuum tubes, gas tubes, transistors, tunnel diodes, photosensitive devices, parametric and maser action.
- 277-78 **Information Theory I-II (3-3)**  
Introduction to probability theory coding theorems, information capacity, capacity of noiseless and noisy channels, channels with and without memory, entropy and information, redundancy in coding, self-correcting codes.
- 280 **Classical Thermodynamics (3)**  
Critical study of first and second laws; ideal and van der Waal gases; kinetic theory and thermochemistry; introduction to statistical thermodynamics and third law.
- 282 **Gas Dynamics (3)**  
Theory of gas dynamics including: combustion, shock phenomena, dynamics of flow, and heat transfer for high temperature gases.

- 283 **Hypersonic Fluid Dynamics (3)**  
Small disturbance theory, Newtonian theory, constant-density solutions, thin shock layers, viscous interactions, free molecule and rarefied gas flows.
- 284 **Combustion Processes (3)**  
Thermodynamics of combustion, chemical kinetics, flame propagation, combustion of liquids and solids, detonation processes.
- 285 **Reaction Kinetics (3)**  
Theoretical aspects of kinetics of homogeneous and heterogeneous reactions in gaseous and liquid systems.
- 287 **Automata and Self-organizing Systems (3)**  
Effectively computable functions and Turing machines, digital computational methods in Boolean algebra, combinational circuits and their analysis, recursion circuits and their analysis, reliability of automata, networks of automata, artificial intelligence.
- 288 **Advanced Digital Computer Programming (3)**  
Machine language programming; relative addressing; Fortran, Algol, and MAD compilers; Bacus notations; Polish string notation; artificial intelligence; interrupt capabilities through software; techniques of monitor programming.
- 289 **Analog Computers (3)**  
Block diagrams, solutions of linear and nonlinear differential equations, analog computer components, model simulation, servomechanism synthesis, scaling factors, applications.
- 291-92 **Energy Conversion I-II (3-3)**  
Thermodynamics of energy conversion, duality of matter, semiconductor theory, thermoelectric engines, thermionic converters; magnetohydrodynamic engines, junction diodes, photovoltaic effects, solar cells, free energy fuel cells, conditions of equilibrium, construction of fuel cells.
- 293-94 **Heat Transfer I-II (3-3)**  
Physical and mathematical concepts of heat transfer phenomena in conduction and convection under steady and unsteady state conditions including dimensional analysis, turbulence and boundary layer theory for convection; physical and mathematical concepts of heat transfer by radiation, configuration factors, network method and solution by determinants.
- 295 **Statistical Thermodynamics (3)**  
Probability, Boltzmann distribution law, partition function and its evaluation, specific heats, equilibrium constants, entropy, introduction to quantum statistics.
- 298 **Research (1 to 3)**  
Research as arranged.
- 299-300 **Thesis (3-3)**

## **ENGINEERING**

### **UNDERGRADUATE**

- 1 **Engineering Planning and Economics (3)**  
Analysis, planning, and economics of engineering projects using mathematical and modern computational methods.



- 2    **Regional and Urban Planning (3)**  
Engineering aspects of regional and urban planning, including: transportation, water supply and sewerage, public safety and convenience, utilities, and natural resources.
- 3    **Introduction to Engineering Experimentation (3)**  
Basic engineering measurements, methods of investigation, handling and graphical presentation of observed data, graphical computations, nomographs. Lecture and laboratory.
- 4    **Introduction to Engineering Design (3)**  
Basic graphics, other methods of representation; principles of optimization; design synthesis. Lecture and laboratory.
- 5    **Basic Engineering Laboratory (3)**  
Engineering laboratory procedures and equipment. Theory and use of meters, oscilloscopes, bridges, strain gages, transducers. Instrumentation of experiments.
- 10    **Hydraulic Engineering (3)**  
Hydraulic system design; including pipe networks, river and channel flow; drainage and irrigation, water supply, and sewerage.
- 11-12    **Structural Design I-II (5-5)**  
Concepts of structural design, elastic design and ultimate strength design of reinforced and prestressed concrete structures, elastic and plastic design of metal structures, individual design problems.
- 15    **Structural Dynamics (3)**  
Analysis and design of structures under vibration, earthquake, blast, and other dynamic loading; energy methods; applications of matrix algebra.
- 19-20    **Engineering Electronics I-II (3-3)**  
Analysis and design of: vacuum tube and solid state devices; voltage and power amplifiers; feedback amplifiers; oscillators; equivalent, relaxation, and computing circuits.
- 21    **Application of Computers to Engineering Problems (3)**  
Machine utilization; number systems; principles of programming, machine language and automatic programming language, Fortran, Algol, Cobol; numerical analysis; basic logical circuits.
- 23-24    **Computer Laboratory I-II (3-3)**  
Use of digital and analog computers; including design, logical circuitry, programming, operation, maintenance, and troubleshooting.
- 31-32    **Thermal Power I-II (3-3)**  
Analysis and design of system components in heat-power, gas and vapor turbine, internal combustion engine, heat pump, and nuclear power systems, including aspects of engineering economy.
- 35    **Fluid Machinery (3)**  
Theory and design of fluid machines; including turbomachinery, torque converters and couplings, and jet machines. Laboratory projects.
- 49-50    **Precise Electrical Measurements I-II (3-3)**  
Electrical measurements, from direct current through radio frequencies; techniques; detectors; bridges; measurement of current, voltage, power,

resistance, capacitance, inductance, energy, phase angle, frequency and time; dielectric and magnetic measurements; topics in high-frequency measurement including field strength, signal-to-noise ratio, impedance, attenuation.

**52 Introductory Transducers and Instrumentation (3)**

Theory, design, and application of simple transducers; design of instrumentation of one-type systems; analysis and design of simple transducer instrumentation.

**53 Advanced Transducers and Instrumentation (3)**

Analysis and design of transducers and instrumentation for measurement in systems containing multiple quantities of one type or mixtures of types.

**54 Precise Mechanical Measurements (4)**

Techniques for precise measurement of mass, time, weight, density, force, pressure, vibration, acceleration, flow, and viscosity.

**55 Precise Heat Measurements (4)**

Temperature scales; measurement by resistance thermometry, thermocouples, pyrometry, vapor pressure thermometry; heat transfer quantities and their measurement; calorimeters, flow calorimeters.

**56 Pressure Measurements (3)**

Experimental techniques for quantitative measurement of pressure; working gages, standards, calibration procedures; methods and apparatus for observations near atmospheric pressure, in the high pressure range, and in the vacuum range.

**100 Intermediate Electrical Engineering Laboratory (3)**

Experiments in the proper use and characteristics of instruments for measuring electrical quantities. Verification of network theorems and electronic theory. Study of electrical devices through experimentation.

**101-2 Communications Laboratory I-II (3-3)**

Analysis and design of solutions to problems in communications and information.

**103-4 Control Laboratory I-II (3-3)**

Analysis and design of electrical, mechanical, pneumatic, hydraulic, and combined control systems.

**105-6 Electrical Engineering Laboratory I-II (3-3)**

Design projects involving electrical and electromechanical devices and systems.

**107-8 Electronics Laboratory I-II (3-3)**

Design projects involving electronic devices and instrumentation.

**109-10 Energy Conversion Laboratory I-II (3-3)**

Analysis and design of solutions to problems in converting energy states and forms.

**111-12 Mechanical Engineering Laboratory I-II (3-3)**

Design projects involving mechanical, fluid thermal, thermomechanical, and electromechanical devices.

- 115 **Reactor Engineering (3)**  
Reaction physics; types of reactors; moderators, control methods, pile design; reactor kinematics; design problems.
- 122 **Digital Techniques (3)**  
Analysis and logical design of combinational and sequential digital circuits. Minimization techniques of multi-output circuits. Electronic realization of logical circuits using diodes, transistors, magnetic cores, tunnel diodes, cyrotons, and other electronic devices. Study of digital systems by the use of tuning diagrams, state diagrams, logical block diagrams, logical equations, and transition matrices. Analog-to-digital converters. Design of a small scale computer. This is an advanced undergraduate course which may be taken for graduate credit.
- 199 **Engineering Research (1 to 3)**  
Undergraduate research projects as approved by the Faculty, with Dean's permission. (Credit is assigned in relation to the work undertaken.)
- GRADUATE**
- 201 **Metal Structures (3)**  
Structural behavior and failure of metal structures, materials, residual stresses, analysis and design of connections and members, theory of plastic collapse of structures, plastic design.
- 202 **Ultimate Strength of Reinforced Concrete Structures (3)**  
Modes of failure of reinforced concrete structures; experimental data on failure; ultimate strength concepts for the analysis of beams, slabs, and columns.
- 203 **Prestressed Concrete Structures (3)**  
Structural behavior and failure of prestressed concrete structures; materials; theory, analysis, and design of prestressed concrete structures and members.
- 204 **Geotechnics in Soil Mechanics (3)**  
Dynamic geology in the formation and properties of soils; Boussinesq and Westergaard equations for stresses and deformations in soil masses; analysis of settlement; flow of water in soils; solutions of Laplace-type equations for seepage involving foundations, earth dams, and wells; theory of frost action.
- 205 **Theoretical Soil Mechanics (3)**  
Theories of soil strength and conditions for failure, bearing capacity of footings, pile foundations, theories of lateral earth pressure, stability of slopes, soil dynamics.
- 206 **Foundation Engineering (3)**  
Principles of soil mechanics and structural mechanics in the analysis and design of spread footings, mat and pile foundations, retaining walls, sheet piling and water front structures.
- 211 **Experimental Structural Analysis (3)**  
Experimental analysis of truss, rigid frame, plate, and shell structures; large- and small-deflection models; similitude.
- 212 **Concepts of Structural Design (3)**  
Advanced seminar relating theoretical and experimental knowledge to the problems of function, form, mechanical behavior, failure, and analysis of structures.



- 218 **Optical Electronics (3)**  
Photoelectric effect, electron excitation, energy states and inverted population, solid-state theory of coherent electromagnetic radiation, masers, lasers, photoconductors and photodiodes, engineering applications, infrared detectors, ultraviolet systems.
- 219 **Nonlinear Electronics (3)**  
Analysis and design of electronic components and systems operating as switching, sweeping, gating and pulse generators; study of multivibrators, negative resistance devices and amplifiers, nonlinear operation of oscillators.
- 220 **High-frequency Electronics (3)**  
High-frequency operation of electron tubes and semiconductor devices, transit time, bunching, pulse techniques.
- 221 **Industrial Electronics (3)**  
Gaseous tubes and applications; rectifiers; timing circuits; induction and dielectric heating; regulation and control, magnetic amplifiers.
- 222 **Electronic Measurements in Medicine (3)**  
Theory of measurements in biological areas, field and circuit theory as a foundation for measurements, techniques for electronic measurements on biological specimens, problems in medicine and psychology with emphasis on measurements and measuring devices.
- 223 **Instrumentation in Medical Engineering (3)**  
Engineering in the medical laboratory, medical use of the computer, engineering techniques in patient treatment, principles of good medical instrumentation.
- 232 **Digital Systems (3)**  
The programmed system; system design of digital computers, special-purpose digital computers, reliability, data-processing techniques, analog-to-digital and digital-to-analog techniques.
- 233 **Microwaves (3)**  
Transmission lines; waveguides; antennas; resonators; amplifiers and oscillators; klystrons, magnetrons, traveling wave tubes.
- 234 **Antennas (3)**  
Maxwell's equations, radiation, impedance, directional characteristics, arrays, aperture antennas.
- 235 **Communication Systems (3)**  
Radar, television; ultra-high-frequency systems; navigational aids.
- 236 **Microwave Communications Systems (3)**  
Ultra-high-frequency systems, transmitters and receivers, television, radar systems, navigational aids.
- 240 **Power Transmission (3)**  
Transmission lines, exact and approximate equivalent circuits, standing waves, filtering, protection, radio interference, high voltage, line configurations.
- 241 **Power Generation (3)**  
Steam, hydroelectric, and nuclear plants; fuel cells; magnetohydrodynamics; efficiency; reheat cycles; stability; load factors; generator swings.

- 242 **Power Systems (3)**  
Substations, transformers, distribution networks, short and open circuit analysis, symmetrical components, stability, network analyzers.
- 270 **Advanced General Metrology (3)**  
Topics in the conceptual, physical, and mathematical aspects of measurement, standards, design for precision measurement, and measurement at extreme values.
- 271-72 **Probability and Statistics of Metrology I-II (3-3)**  
Probability distributions, discrete and continuous distributions; sampling; combinatorial analysis; stochastic processes; conditional probability; correlation; analysis of variance; design and analysis of experiments, Latin Square experiments, factorial experiments, block and lattice design.
- 273 **Microwave Measurements (3)**  
Measurement of power, frequency, impedance, wavelength, and attenuation at microwave frequencies. Characteristics and Q of resonant devices.
- 274 **Precise Optical Measurements (3)**  
Optical constants of lens systems; aberration; resolving power; illumination in focal plane; image evaluation, magnification, index of refraction; color and color temperature.
- 275 **Precise Electrical Standards (3)**  
Concepts of standards, errors, design of resistance, capacitance and inductance standards, DC voltage standards, frequency and time standards, dielectric and magnetic materials, attenuation standards, power standards, transfer standards.
- 298 **Research (1 to 3)**  
Research as arranged.
- 299-300 **Thesis (3-3)**

## ENGINEERING ADMINISTRATION

### GRADUATE

- 204 **Administration of Engineering Contracts (3)**  
Study of types of contracts, proposal preparation, evaluating contracts, negotiation, contract extension policies and procedures, appraisal of capabilities of contractors.
- 207 **Personnel Administration (3)**  
Study of personnel functions with emphasis on relationships within organizations which utilize the services of engineers and scientists: employment, health, safety, education and training, financial compensation, union relations, collateral benefits and services, human relations and personnel research practices in engineering and industry.
- 210 **Engineering Law (3)**  
Legal principles and procedures of interest to engineers, the American Legal System, contracts and specifications, liability of professional engineers, anti-trust problems, agency relationships, negotiable instruments, patent and proprietary rights, special problems in research and developmental contracts.

## 84 ENGINEERING AND APPLIED SCIENCE

- 211 Engineering Administration I (3)**  
Planning and scientific method in administration. Characteristics of plans; establishment of objectives and goals; forecasting future conditions; determining policies, methods, and procedures; organizing for planning; testing of plans. Decision making; problem solving; factors in decisions, problem formulation, model building, testing and solving, testing and control of solutions.
- 212 Engineering Administration II (3)**  
The (1) organizing, (2) directing or leading, and (3) controlling elements of the administrative process. Characteristics of organization, departmentization, authority, responsibility, levels of specialization, coordination, decentralization, staff, committees, delegation, personnel management, executive leadership, communication; implications of automation; systems analysis for effective administration. Principles and methods for evaluation and control of operations.
- 213 Engineering Administration III (3)**  
(Sequential to EA 211 and EA 212)  
Application of principles of administration and scientific method in solving case problems.
- 253 Management of Production Processes and Facilities (3)**  
Planning, organizing, and control of production; forecasting techniques; material management; methods of loading and scheduling production processes; electronic methods in production control. Organization and administration of the plant engineering function with emphasis on maintenance control programs.
- 254 Principles and Procedures of Automatic Data Processing Systems (3)**  
Logic of computers, arithmetic and control units, systems analysis for data processing applications, systems design, systems economics, relation to scientific decision processes.
- 255 Administration of Research and Development (3)**  
Contemporary practices of administrators of scientific and engineering research and development for the purpose of finding uniformities, characteristics, and conceptual schemes; relation of such findings to accepted managerial concepts, and projection of their implications on contemporary managerial hierarchies and organizational structures.
- 261 Economic Analysis in Engineering Planning (3)**  
Important concepts and theories employed in economic analysis of engineering projects. Application of tools and techniques used in various analytical processes. Detailed practice in pursuit of solutions to, and adjustment of, persistent and current problems in this field.
- 263 Quantitative Techniques of Engineering Administration (3)**  
Application of the various quantitative techniques, mathematical, statistical, and other management sciences' techniques to the analysis of engineering administration and the solution of administrative problems by the use of models, theories, and measurements.
- 271 Operations Research (3)**  
Background and application of operations research; history, characteristics, capabilities, administrative considerations, methods and techniques, including construction of conceptual and mathematical models.



- 272 **Problems in Operations Research (3)**  
Field experience in operations research on a team basis. Each small group locates an actual problem and formulates and solves it by operations research models. Class evaluation of progress.
- 275 **Linear Programming (3)**  
The basic computational, theoretical, and applied areas with emphasis on the general linear programming problems; simplex computational procedure; duality; transportation and assignment problems; production scheduling problem; zero-sum two-person games; applications and recent developments.
- 276 **Theory of Games (3)**  
Study of mathematical models with applications to the relationships among independent competitive entities (persons or organizations in environment of competition, bargaining, bidding), selection of optimum strategies, mixed strategies, minimax concept, connections with linear programming and decision functions, two-person and n-person zero and nonzero sum games.
- 277 **Queuing Theory (3)**  
Study and analysis of operational systems with variables in arrivals and service, Monte Carlo analysis, optimization methods.
- 285 **Seminar in Administrative Problems (3)**  
Individual analysis of complex administrative problems, with group evaluation and discussion. Prerequisite: admission to candidacy and completion of at least 18 semester hours of graduate study.
- 298 **Research in Engineering Administration (arr.)**  
Application of established principles to new engineering administrative situations; the development of new knowledge of administration. Creative thinking in engineering administration, initiation of new theories and principles, development of new hypotheses, experimentation, proof of theories and hypotheses.
- 299-300 **Thesis (3-3)**

## English

*Professors* E. S. Shepard, C. D. Linton, C. W. Cole, \*R. H. Moore, J. H. Coberly, P. H. Highfill, Jr., J. G. Allee, Jr., J. P. Reesing, Jr. (*Chairman*), R. H. Walker, Jr., †Milton Crane

*Adjunct Professor* J. C. Broderick

*Associate Professors* \*W. L. Turner, Muriel McClanahan, ‡Elizabeth Wright, S. J. Brown, R. N. Ganz, Louise Clubb, G. E. McCandlish, C. C. Mondale

*Assistant Professors* R. C. Rutledge, R. R. Columbus, J. A. Quitslund, R. E. Stockton, Judith Plotz, L. C. Schaefer

*Assistant Professorial Lecturers* J. J. Moore, John Gigrich, Harrison Clark

\* On sabbatical leave spring semester 1965-66.

† On sabbatical leave 1965-66.

‡ On sabbatical leave fall semester 1965-66.

*Instructors* F. R. Turaj, J. A. L. Lemay, R. F. Marler, Jr., Andrea Santer, Mary Cunningham, Barbara Dunham, D. R. Janis, J. R. Greenya, Karen Lachowitch, Beatrice O'Donnell

*Instructors (part-time)* J. S. Toomey, Eileen Allen, V. C. Trofi, D. F. White, Edgar Boling, Elna Broffman, James Gabriel, Lianna Larabee, Donna Lerew, Mary McHenry, Norma McQueen, Gertrude Mitchell, Ruth Sherman, Helen Sutton

## ENGLISH COMPOSITION \*

### FIRST GROUP

**A English for Foreign Students (3)** Wright and Staff  
A course in reading and writing designed to assist the foreign student in overcoming deficiencies in the use of English. Special attention is given to spelling, syntax, grammar, idiom, and vocabulary. (Fall and spring—day and evening; summer 1965.)

**B English for Foreign Students (3)** Wright and Staff  
For second-semester foreign students not yet ready for English 1. Writing of expository paragraphs and themes; outlining; reading for comprehension, vocabulary, and style. (Fall—evening; spring—day and evening; summer 1965.)

**1 English Composition \* (3)** Moore and Staff  
A course in the analysis and practice of expository techniques with emphasis on unity, development, and organization. (Fall and spring—day and evening; summer 1965.)

**1x English Composition \* (3)** Moore and Staff  
An intensive course in English grammar and composition to which are assigned students whose placement tests show them inadequately prepared for the regular work of English 1. The course begins with detailed instruction, drill, and exercises in the basic structure of the English language and in the writing of paragraphs; it continues with the content of English 1. English 1x meets five hours a week and carries 3 semester hours of credit. The total fee is \$163 (the tuition fee of \$138 plus an additional fee of \$25.) (Fall and spring—day and evening; summer 1965.)

**2 English Composition (3)** Moore and Staff  
For second-semester freshmen not following the Columbian College of Arts and Sciences sequence. Readings and practice in expository and argumentative techniques and in research procedure. Credit is not given for students who have credit for English 4. Prerequisite: English 1 or 1x. (Fall and spring—day and evening; summer 1965.)

**4 English Composition (3)** Moore and Staff  
The second half of the six-hour English Composition course required of students in Columbian College. A course in critical analysis and practice in

\* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared are assigned to English 1x.

English 1 or 1x is prerequisite to all other courses in English. English 2 is the second half of the six-hour composition course requirement of students not required to follow the Columbian College of Arts and Sciences sequence.

expository and argumentative techniques and in research procedure. Credit is not given for students who have credit for English 2. Prerequisite: English 1 or lx and both semesters of one of the introductory literature courses. (Fall and spring—day and evening; summer 1965.)

## SECOND GROUP

- 109 Expository Writing (3)** McClanahan  
A study of types of expository writing with weekly exercises based on students' needs; particular attention may be given to problems in the writing of graduate theses. Prerequisite: English 1 or lx, and 2 or 4. (Fall—day.)
- 113 Narrative Writing (3)**  
Study of the techniques of narrative writing and class criticism of student writing. Prerequisite: English 1 or lx, and 2 or 4. (Fall—day and evening.)
- 114 The Writing of Fiction—the Short Story (3)**  
Prerequisite: English 113; consent of instructor. (Fall—evening.)
- 117-18 The Writing of Fiction—the Novel (3-3)**  
Writing a novel. Prerequisite: English 114; consent of instructor. (Academic year—evening.)
- 120 The Writing of Poetry (3)**  
Prerequisite: consent of the instructor. (Spring—evening.)

## ENGLISH LITERATURE

### FIRST GROUP

- 51-52 Introduction to English Literature \* (3-3)** Highfill and Staff  
Historical survey. Prerequisite: English 1 or lx. (Academic year—day and evening; summer 1965.)
- 91-92 Introduction to European Literature \* (3-3)** Shepard and Staff  
Consideration of various types. Prerequisite: English 1 or lx. (Academic year—day and evening.)

### SECOND GROUP\*

- 121 Medieval English Literature—Exclusive of Chaucer (3)** Allee  
(Summer 1965.)
- 122 Chaucer (3)** Allee  
(Spring—evening.)
- 125 Introduction to English Linguistics (3)** Allee  
The development of the English language in a historical treatment of English grammar. (Fall—evening.)

\* English 51-52, 71-72, 91-92, Classical Languages 71-72, French 51-52, German 51-52, Russian 91-92 or Slavic 93-94, or Spanish 51-52 is prerequisite to all second-group courses except English 125.



- 129-30 **Elizabethan Nondramatic Literature (3-3)** Quitslund  
Nondramatic literature from 1485 to 1601. (Academic year—evening.)
- 135-36 **Shakespeare (3-3)** Highfill, Crane  
(Academic year—day and evening.)
- 139-40 **The 17th Century (3-3)** Linton  
*First half:* poetry and prose from 1603 to 1660. *Second half:* Milton.  
(Academic year—day; summer 1965—English 139 (3).)
- 141-42 **English Literature, 1660-1780 (3-3)** Highfill  
Poetry and prose of the Neoclassic period. *First half:* from 1660 to 1740.  
*Second half:* from 1740 to 1780. (*First half:* summer 1965. *Second half:*  
not offered 1965-66.)
- 151-52 **The Romantic Movement (3-3)** Reesing  
Poetry and prose from 1780-1830. (Academic year—evening; summer  
1965—English 152 (3).)
- 161-62 **Victorian Literature (3-3)** Columbus  
Poetry and prose from 1830 to 1900. *First half:* from 1830 to 1858.  
*Second half:* from 1859 to 1900. (Academic year—day.)
- 165-66 **The 20th Century (3-3)** Linton  
British poetry, prose, and drama since 1900. (Academic year—day.)
- 181-82 **The English Novel (3-3)** Clubb  
Major English novelists of the 18th and 19th centuries. (Academic year  
—evening.)
- 183-84 **The English Drama (3-3)** Highfill  
*First half:* concerned principally with the drama of Shakespeare's con-  
temporaries. *Second half:* a historical survey from 1660 to the present day.  
(Academic year—day.)
- 192 **Medieval Legend and Saga (3)** Allee  
Celtic and Norse. (Not offered 1965-66.)
- 199-200 **Proseminar: Readings for the English Literature Major (3-3)** Reesing and Staff  
Conferences and group discussions. (Academic year—day and evening.)

### THIRD GROUP

- 223-24 **Old English (3-3)** Allee  
English language and literature before 1100. *First half:* Old English gram-  
mar and readings. *Second half:* Beowulf. (Not offered 1965-66.)
- 229-30 **Studies in Elizabethan Nondramatic Literature (3-3)** Clubb  
Prerequisite: English 129-30. (Academic year—day.)
- 235-36 **Studies in Shakespeare and His Contemporaries (3-3)** Crane  
Prerequisite: English 135-36. (Academic year—evening.)
- 239-40 **Studies in 17th Century Literature (3-3)** Reesing  
Open to qualified undergraduates. *First half:* chief figures exclusive of  
Milton. *Second half:* Milton. (Not offered 1965-66.)

- 241-42 **Studies in Neoclassical Literature (3-3)** Highfill  
Prerequisite: English 141-42. (Not offered 1965-66.)
- 251-52 **Studies in the Romantic Movement (3-3)** Reesing  
Prerequisite: English 151-52. (Not offered 1965-66.)
- 261-62 **Studies in Victorian Literature (3-3)** Columbus  
Prerequisite: English 161-62. (Academic year—evening; summer 1965—English 261 (3).)
- 265-66 **Studies in 20th Century Literature (3-3)** Linton  
Eliot and his contemporaries. (Not offered 1965-66.)
- 279 **Research Methods and Bibliographical Materials (3-3)** Broderick  
(Formerly English 273)  
For description of course see American Literature 279, page 91. (Fall—evening.)
- 283-84 **Studies in the History of the British Drama and Theater (3-3)** Highfill  
Prerequisite: English 135-36, or 183-84, or 175-76, or the equivalent. (Academic year—day; summer 1965—English 283 (3).)
- 295-96 **Studies in the History of English Literary Criticism (3-3)** Shepard  
Open to undergraduates with the approval of the instructor. (Not offered 1965-66.)
- 299-300 **Thesis (3-3)** The Staff

## AMERICAN LITERATURE

### FIRST GROUP

- 71-72 **Introduction to American Literature \* (3-3)** Cole and Staff  
A historical survey. *First half:* from the beginnings to the Civil War. *Second half:* from the Civil War to the present. Prerequisite: English 1 or 1x. (Academic year—day and evening; summer 1965.)

### SECOND GROUP

- 170 **The American Short Story (3)** Coberly  
The historical development of the short story in America. (Fall—day; spring—evening.)
- 171-72 **Studies in American Literature (3-3)** Turner  
Major factors in the national cultural tradition as shown by outstanding writers. Prerequisite: English 51-52 or 71-72. (Academic year—day and evening; summer 1965—English 172 (3).)
- 173-74 **Major American Poets (3-3)** Ganz  
Advanced critical study of significant writers and movements. *First half:* from beginnings through 19th century. *Second half:* the 20th century. (Academic year—evening; summer 1965.)

\* English 51-52, 71-72, 91-92, Classical Languages 71-72, French 51-52, German 51-52, Russian 91-92 or Slavic 93-94, or Spanish 51-52 is prerequisite to all second-group courses except English 171-72.

- 175-76 **American Drama (3-3)** Cole  
Historical and critical study of significant plays and forms. *First half:* from beginnings to 1930. *Second half:* since 1930. (Academic year—day; summer 1965.)
- 177-78 **The American Novel (3-3)** Coberly  
Historical and critical study of significant novels and short stories. *First half:* from beginnings through 19th century. *Second half:* the 20th century. (Academic year—day.)
- 179-80 **Proseminar: Readings for American Thought and Civilization Majors (3-3)** Walker and Staff  
Conferences and group discussions. (Academic year—day and evening.)
- THIRD GROUP**
- 270 **Seminar: the American Short Story (3)** Coberly  
(Summer 1965.)
- 271-72 **Seminar: American Thought (3-3)** Walker  
Intensive consideration of specific periods and themes, primarily literary, in the history of American civilization. Prerequisite: English 171-72 or the equivalent. (Not offered 1965-66.)
- 273-74 **Seminar: Studies in American Poetry (3-3)** Ganz  
Prerequisite: English 173-74 or the equivalent. (Academic year—evening; summer 1965—English 274 (3).)
- 277-78 **Studies in American Fiction (3-3)** Coberly  
Prerequisite: English 177-78 or the equivalent. Open to the undergraduate with the approval of the instructor. (Academic year—evening.)
- 279 **Research Methods and Bibliographical Materials (3)** Broderick  
(Formerly English 273)  
To acquaint graduate students with the principal sources of bibliography and with typical problems in research. (Fall—evening.)
- 280 **Studies in American Transcendentalism (3)** Broderick  
(Spring—evening.)
- 281-82 **Reading Course in American Civilization (3-3)** Walker  
A consideration of the principal descriptive and interpretive works dealing with American civilization, with emphasis on the interdisciplinary understanding of this subject. Prerequisite: at least one upper-division or graduate course in both American literature and American history. (Not offered 1965-66.)
- 285 **Studies in American Colonial Literature (3)** McCandlish  
(Fall—evening.)
- 287-88 **Reading Course in American Fiction (3-3)** Coberly  
Primarily for graduate students, designed to cover the literature and the critical materials for which the student will be responsible on comprehensive and final examinations. (Not offered 1965-66.)
- 289-90 **Thesis (3-3)** The Staff



## RELATED COURSES IN OTHER DEPARTMENTS

Classical Languages and Literatures 71-72 *Greek and Roman Backgrounds in Literature* (3-3)  
Education 136 *Teaching English in Secondary Schools* (3)  
History 71-72 *The Development of the Civilization of the United States* (3-3)  
History 151-52 *English History* (3-3)  
Philosophy 111-12 *History of Philosophy* (3-3)  
Philosophy 172 *American Philosophy* (3)  
Speech B-C *American Speech for Foreign Students* (3-3)  
Speech 102 *Oral Interpretation of Literature* (3)

## COURSE OFFERED IN AMERICAN STUDIES INSTITUTE SUMMER 1965

172 *Studies in American Literature* (3)

## ENGLISH INSTITUTE—SUMMER 1965 (English 209)

Modeled on the curriculum established by the Commission on English of the College Entrance Examination Board, the Institute offers classes daily in the areas of literature, language, and composition, plus three workshops each week. The program carries 6 semester hours of credit applicable toward graduate degrees in Education. Enrollment limited. (Detailed information is available in the Office of the Dean of the Summer Sessions.)

## French

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See "Romance Languages and Literatures."

## Geography and Regional Science

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*Professors* R. D. Campbell, Samuel Van Valkenburg (*Visiting*)  
*Professorial Lecturers* Victor Petrov, Solomon Chafkin  
*Associate Professor* J. T. Davis (*Chairman*)  
*Assistant Professor* A. R. Gassaway

### FIRST GROUP

51 **Introduction to Geography** (3)

The Staff

A study of place attributes and characteristics, patterns and associations of physical and cultural earth features. (Fall and spring—day and evening.)

92 GEOGRAPHY AND REGIONAL SCIENCE

**52 World Regions (3)**

The Staff

The analysis of world regional divisions, descriptions and interpretation of region complexes, evaluation of regional differences as they affect the distribution and activities of man. (Fall and spring—day and evening.)

**SECOND GROUP**

Courses numbered 151, 153, 154, 155, 156, 161, 164, 165, 166, and 169 are geographic surveys of various regions and provide introduction to more detailed study. No prerequisites are required. Terrain features and climate and the nature and distribution of cultural phenomena are considered in a regional context. Interrelationships among the various elements and nations are discussed and evaluated.

**103-4 Cartography (3-3)**

The Staff

A year course: credit is not given for the first half until the second half is completed. Principles of cartographic drafting, elementary map projections, map and graph planning design and construction, uses and interpretation of maps. Prerequisite: Geography 51 and 52. Laboratory fee, \$11 a semester. (Academic year—Saturday morning.)

**105-6 Regional Climatology (3-3)**

Van Valkenburg

Detailed survey of the climates of the world; their distribution and genesis and their impact on the economy, with special reference to the use of land. (Academic year—evening.)

**124 Land Capabilities (3)**

Davis

Analysis of location; physical characteristics and economic and social contexts as they contribute to land development potential. (Fall—evening.)

**125 Transportation Complexes (3)**

Davis

A study of transportation functions, principles governing the evolution of transportation systems, reciprocal relationships between transportation systems and urban and regional development. (Spring—evening.)

**126 World Economies (3)**

Gassaway

Basic principles of economic geography illustrated by reference to differing regional economies—pastoral, agricultural, industrial; patterns of world distribution. (Fall—day.)

**127 World Population and Settlement (3)**

Gassaway

Population composition, structures, and distribution; characteristic world settlement patterns in terms of population organization. Assessment of factors contributing to population pressures, explosions and migrations, urban and rural settlement patterns and trends. (Spring—day)

**128 Economic Growth of Underdeveloped Areas (3)**

Westermann

Definition of underdevelopment; locations of developing societies; nature and causes of retarded development; socioeconomic development planning; instruments and institutions for social, economic, and political development; foreign aid programs. (Fall—evening.)

**130 Economic Geography: Mediterranean Basin (3)**

Davis

Description of differing regional economies and their relationships to the human and natural resources commanded by the region. Evaluation of economic problems and prospects for improvement. (Summer 1965.)

- 131 **Regional Development: Mediterranean Region (3)** Checchi,\* Clements,\* Chafkin \*  
A special course describing development concepts, implications, and projects; both public and private roles in regional development are discussed. (Summer 1965.)
- 133 **Regional Industrial Structures (3)** Westermann  
The nature of the industrial complex, types and distribution of industry, principles of industrial and economic development planning. (1966-67 and alternate years.)
- 134 **Location of Industry (3)** Westermann  
Structure and development of the major world industries, industrial location requirements, principles of industrial equilibrium. (1966-67 and alternate years.)
- 139 **European Economic Blocs (3)** Gassaway  
Principles of economic geography applied to the regional economies of Europe; European Economic Community, European Free Trade Association, and COMECON. (Spring—evening.)
- 141-42 **Urban Settlement (3-3)** Westermann  
Location, functions, and forms of cities; urban-rural relationships; the urban hierarchy; urban problems and the history of their development; the city of the future. (1965-66 and alternate years: academic year—day.)
- 145 **Psychological Geography (3)** Campbell  
A study of differences in national character structures, modal behavior patterns and personality traits typical of various cultures, difficulties these differences present in interpersonal relations and intercultural communications. (Spring—day.)
- 146 **World Political Geography (3)** Van Valkenburg  
Types and distributions of political systems, the major political units and associations of the world, factors which affect relative political power, areas of conflict and arbitration. (Fall—day.)
- 147 **Political Geography: Mediterranean Basin (3)**  
Characteristics of political systems and entities. Factors which affect relative political power, areas of conflict, and arbitration; political and other associations with non-Mediterranean areas. (Summer 1965.)
- 151 **United States † (3)** Davis  
(Not offered 1965-66.)
- 153 **Western Europe † (3)** Van Valkenburg  
(Not offered 1965-66.)
- 154 **The Mediterranean: Geography of Mediterranean Lands † (3)** Van Valkenburg  
A regional survey of Mediterranean Europe with special reference to the Iberian Peninsula (Spain and Portugal), Italy, and Greece. Emphasis on the impact of man on the physical environment. (Summer 1965.)

\* Appointment for summer 1965.

† Regional Survey. No prerequisites. For students particularly interested in the study of specific regions, regional courses in the departments of Economics, History, and Political Science are strongly recommended, for example: Economics 185-86, *Economic History and Problems of Latin America*; History 164, *South America since Independence*; and Political Science 177, *Recent Trends in Latin American Politics and Government*.



- 155 **Africa \*** (3) Gassaway  
(Fall—day.)
- 156 **The Middle East \*** (3) Van Valkenburg  
(Spring—day.)
- 161 **Latin America \*** (3) Westermann  
(Spring—day.)
- 164 **Communist China \*** (3) Davis  
(Not offered 1965–66.)
- 165 **Eastern and Southeastern Asia \*** (3)  
(Not offered 1965–66.)
- 166 **The Soviet Union \*** (3) Gassaway  
(1966–67 and alternate years.)
- 169 **Field Trip: Southern Europe \*** (6) Van Valkenburg  
Five weeks of lectures and travel in Southern Europe illustrating the inheritance of the past, the problems of the present, and the potential for the future. Countries included in the 1965 field trip are: France, Spain, Portugal, Morocco, and Switzerland. Prerequisite: Geography 154 or the equivalent. (Summer 1965.)
- 172 **Historical Geography: the Mediterranean Basin** (3) Van Valkenburg  
The Mediterranean Basin as a geographic unit during the course of history. Its economic and political importance in ancient times (Phoenicia, Greece, and Palestine), during the Roman Empire, the Middle Ages, and the Renaissance. Development from the Napoleonic Period to the present time. (Summer 1965.)
- 173–74 **City Planning** (3–3) Davis  
Optimum designs for future cities, theory and techniques of planning, action and implementation, information systems for city planning, methods of analysis of urban data, the design of proposed urban development and renewal. (1966–67 and alternate years.)
- 175–76 **Regional Planning** (3–3) Campbell  
Regional systems and subsystems, regional structures and functions, regional analysis, regional information systems, methods of economic and social planning, design of plans, government and implementation. (Not offered 1965–66.)
- 179–80 **Readings in Urban and Regional Development** (1–1) Davis  
(Academic year—as arranged.)
- 189–90 **Readings in Geography** (1–1) Gassaway  
(Academic year—as arranged.)
- 199–200 **Theory of Regions** (3–3)  
Area synthesis; comparison of the constructs region, system, and field; delineation, measurement, and analysis. (Not offered 1965–66.)

\* See (†) footnote on page 94.

### THIRD GROUP\*

- 201-2 **Seminar: History and Philosophy of Geography (3-3)**  
A year course: credit is not given for the first half until the second half is completed. A study of the development of geographic thought and an attempt to develop a useful, contemporary philosophy of geography. (1966-67 and alternate years.)
- 205-6 **Area Data Collection and Analysis (3-3)** Davis  
A year course: credit is not given for the first half until the second half is completed. Lecture (1 hour), laboratory and field (3 hours). Sources of regional information, methods and systems of data collection, quantitative and qualitative methods of analysis, systems of synthesis. (Academic year—evening.)
- 233-34 **Seminar: Regional and Urban Planning (3-3)** Westermann  
A year course: credit is not given for the first half until the second half is completed. Analysis of the planning function, major problems confronting the planner, contemporary status of planning—its areas of success and failure. (1966-67 and alternate years: academic year—evening.)
- 241-42 **Seminar: Place and Culture (3-3)** Campbell  
A study of the culture traits which characterize various ethnic groups and differentiate people-place associations. (First half: not offered 1965-66. Second half: spring—evening.)
- 253-54 **Seminar: Problems of Developing Nations (3-3)** Chafkin  
Traditional societies and their disruption; modernization, social change, and economic development; problems of urban and regional planning; foreign aid programs. (Academic year—evening; summer 1965—Geography 253 Topic: Circum-Mediterranean Countries of Southern Europe and North Africa (3) (Davis).)
- 265 **Seminar: Geography of the Soviet Union (3)** Petrov  
A detailed study of the area, including physical features, economic geography, natural and energy resources, and industries. A discussion of the latest Soviet projects, of the Soviet transportation system, of agriculture, and of multinational population trends, with emphasis on population patterns along borderlands, especially the Sino-Soviet border. (Fall—evening.)
- 266 **Seminar: Geography of China (3)** Petrov  
A study of the physical and economic geography of the country, including discussion of China's emerging industries, energy resources, transportation system. Special emphasis will be given to the population "explosion"—its distribution and significance. Emphasis also on regional geography, particularly on regions along the Sino-Soviet border, Manchuria, Tibet, Mongolia, Inner Mongolia, and Sinkiang. (Spring—evening.)
- 295-96 **Research (3-3)** The Staff  
(Academic year—as arranged.)
- 299-300 **Thesis (3-3)** The Staff

### COURSES OFFERED IN SPECIAL PROGRAM

In addition to the regular courses announced above, the University offers the following courses for students undertaking work toward the

\* Senior major or graduate status is required in all third-group courses.

degree of Bachelor of Science in Geodetic and Cartographic Science, which is administered by the College of General Studies. For information concerning the degree see the brochure on the subject.

#### GEOGRAPHY

- 51 *Introduction to Geography* (3)
- 52 *World Regions* (3)
- 115-16 *Physical Geography* (3-3)
- 124 *Land Capabilities* (3)
- 125 *Transportation Complexes* (3)

#### GEODETTIC AND CARTOGRAPHIC SCIENCE

- 1 *Map Reading and Photointerpretation* (3)
- 11 *Elementary Cartography* (2)
- 12 *Plane Surveying* (3)
- 13 *Higher Surveying* (3)
- 17-18 *Elementary Photogrammetry* (3-3)
- 110 *Map Projections* (2)
- 111 *Cartographic Techniques and Map Reproduction* (2)
- 155 *Elementary Geodesy* (3)
- 156 *Geodetic Astronomy* (3)
- 160 *Theory of Errors and Geodetic Adjustments* (3)
- 197-98 *Proseminar in Geodesy, Photogrammetry, and Cartography* (3-3)

#### OCEANOGRAPHY

- 101-2 *Introductory Oceanography* (3-3)
- 109 *Tides* (3)

## Geology

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*Professors* Geza Teleki (*Chairman*), G. V. Carroll

*Professorial Lecturers* Michael Fleischer, H. T. Evans, Jr., I. G. Sohn,  
Nicholas Hotton

*Associate Professors* J. W. Pierce, L. B. Platt, F. R. Siegel

*Associate Professorial Lecturers* Daniel Appleman, J. T. Dutro, Jr.,  
E. G. Kauffman, W. E. Maloney, P. M. Kier

*Instructor* George Rabchevsky

*Instructors (part-time)* Frederick Collier, D. H. Massie

#### FIRST GROUP

- 1-2 *Introductory Geology* (3-3) The Staff

Lecture (2 hours), laboratory and field trip (2½ hours). A survey course covering the principles of geology. Laboratory fee, \$10 a semester. (Academic year—day; summer 1965.)



**12 Rocks, Fossils, and Minerals (3)**

Carroll

Lecture (2 hours), laboratory (3 hours). Introduction to rocks, fossils, minerals, ores, gems, and other mineral deposits. Prerequisite: Geology 1 and high school chemistry, or permission of the instructor. Laboratory fee, \$10. (Spring—day.)

**SECOND GROUP**

**101 History of Geological Sciences (2)**

Teleki

Lectures on the development of geological thought and the history of geological and related sciences. (1966–67 and alternate years.)

**103 Development of Scientific Thought (3)**

Teleki

(Not offered 1965–66.)

**107 Dynamic Geology (3)**

The Staff

Lecture (2 hours), laboratory and field trips as arranged. The interrelation of endogene and exogene forces in the processes of sedimentation and vulcanism; geochemical and geophysical aspects of epicontinental and geosynclinal areas. Prerequisite: Geology 1. (Fall—day.)

**111–12 Mineralogy (4–4)**

Carroll

A year course: credit is not given for the first half until the second half has been completed (except for chemistry majors who may receive credit for the first half only). Lecture (2 hours), laboratory (4 hours). *First half:* morphological crystallography and elementary aspects of optical crystallography with their application to the identification of minerals. *Second half:* optical mineralogy; identification of nonopaque minerals by use of the polarizing microscope. Prerequisite: Geology 1–2. Laboratory fee, \$10 a semester. (Academic year—day.)

**115 Petrography (4)**

Carroll

Lecture (2 hours), laboratory (4 hours). Megascopic and microscopic identification and classification of common rocks. Prerequisite: Chemistry 11–12; Geology 111–12. Laboratory fee, \$10. (Fall—day.)

**117 Introduction to Petrology (3)**

Carroll

Lecture (2 hours), laboratory (3 hours). Lectures on petrogenic theory with emphasis on igneous and metamorphic rocks; laboratory work on the diagnosis of rock genesis by polarizing microscopic determination of mineralogical and textural characteristics. Prerequisite: Geology 115. Laboratory fee, \$10. (Fall—day.)

**122 Structural Geology (3)**

Platt

Lecture (2 hours), laboratory and field trips as arranged. Genetic interpretation of geologic formations on the basis of their structures, with emphasis on applications to geological field work. Prerequisite: Geology 1–2. (Fall—day.)

**123 Tectonics (3)**

Platt

Lecture (1 hour), laboratory (4 hours). Introduction to specialized techniques of structural analysis, and to tectonic theory. Prerequisite: Geology 122. (Spring—evening.)

**125 Marine Geology (3)**

Pierce

Lecture and map work. Principles of oceanography and submarine geology; geology of the deep sea; topography, crustal structure, sedimentary processes, and marine environment. Prerequisite for geology majors: Geology 1–2; for students in fields other than geology, permission of the instructor. (Fall—day.)

- 128 **Geomorphology (4)** Teleki  
Lecture (2 hours), laboratory (2 hours), field trips as arranged. Nature and evolution of earth forms, interpretation of maps and aerial photographs. Prerequisite: Geology 107. (Spring—day.)
- 130 **Photointerpretation (4)** Pierce, Teleki  
Lecture (2 hours), laboratory (3 hours). Principles of photogrammetry, interpretation of geographical and geological features on aerial photographs, evaluation of data with stereoscopic methods. Laboratory fee, \$10. (Spring—day.)
- 141 **Geochemistry (3)**  
Principles and theories on the abundance, relationships, and the distribution in the various rock and mineral species. (Fall—day.)
- 151-52 **Invertebrate Paleontology (3-3)** Kauffman  
Lecture (2 hours), laboratory (3 hours), field trips as arranged. Classification and evolution of fossil invertebrates, paleoecology of invertebrate organisms. Prerequisite: Geology 1-2. Laboratory fee, \$10 a semester. (Academic year—evening.)
- 154 **Vertebrate Paleontology (3)** Hotton  
Lecture (2 hours), laboratory or field as arranged. General features of vertebrate morphology and evolution as illustrated by the fossil record; problems of paleoecology and adaptation, where appropriate. (Spring—evening.)
- 157 **Methods in Paleontology (3)** Sohn  
An introduction to the principles and techniques of paleontological research, including the rules of zoological nomenclature. Prerequisite: Geology 151-52. (Fall—evening.)
- 163 **Sedimentation (4)** Pierce  
Lecture (2 hours), laboratory (4 hours). Principles of sedimentation, analysis and interpretation of sedimentary processes and environment, laboratory experiments in the properties of sedimentary particles. Prerequisite: Geology 107. Laboratory fee, \$15. (Fall—day.)
- 166 **Stratigraphy (4)** Pierce  
Lecture (2 hours), laboratory (4 hours). Sedimentation, facies, evaluation of stratigraphic boundaries, principles of correlation, applied stratigraphic geology. Prerequisite: Geology 107, 163. (Spring—day.)
- 173 **Regional Geology (3)** The Staff  
Lecture (3 hours), recitation (1 hour). Lecture and map work on the regional distribution of geological formations and structures. This course may be reelected for credit. Prerequisite: Geology 107, 122, or permission of the instructor. (Spring—day.)
- 181 **Oceanography I (3)** Maloney  
Chemical and physical properties of sea water, movements of water masses, meteorological interrelations, ecology of marine plants and animals. Prerequisite: Chemistry 11-12, Physics 51-52. (Fall—evening.)
- 182 **Oceanography II (3)** Maloney  
Boundary processes and interactions between sea water and the atmosphere, principles of dynamics and their application to motion and distribution of variables, acoustics of water masses, review of recent literature and problems. Prerequisite: Geology 181. (Spring—evening.)

**191 Laboratory Techniques I (2)**

Massie

Lecture (1 hour), laboratory (2 hours). An introduction to photographic procedures and techniques. Laboratory fee, \$15. This course may be repeated for credit with the approval of the Department. (Fall and spring—Saturday morning.)

**192 Laboratory Techniques II (2)**

Collier

Lecture (1 hour), laboratory (3 hours). An introduction to laboratory machinery and techniques, preparation of thin sections, grinding and polishing techniques, fossil preparation, organization and handling of collections. Laboratory fee, \$15. This course may be repeated for credit, with the approval of the Department. (Fall—Saturday morning.)

**THIRD GROUP**

**202 Geometrics (3)**

Pierce

Lecture (2 hours), laboratory (as arranged). Application of statistics to geological and paleontological problems, quantitative and mathematical approach. Prerequisite: Mathematics 23 or permission of the instructor. Laboratory fee, \$10. (Spring—day.)

**205-6 Seminar in Geology (3-3)**

The Staff

Special topics. Does not repeat itself and may be elected in successive years. (Academic year—as arranged.)

**211 X-ray Crystallography (3)**

The structure of crystals as determined by the X-ray method. (1966-67 and alternate years.)

**212 Crystal Chemistry \* (3)**

Evans

Chemistry of the solid state. Bonding and coordination and the role of crystalline structure in chemistry and mineralogy. (1966-67 and alternate years.)

**216 Sedimentary Petrography (4)**

Pierce

Lecture (2 hours), laboratory (4 hours). The mineralogy and chemistry of sediments and sedimentary rocks; identification, description, and classification of sedimentary rocks with megascopic and microscopic methods. Prerequisite: Chemistry 11-12; Geology 111-12, 163. Laboratory fee, \$10. (Spring—day.)

**227 Coastal Morphology (3)**

Teleki

Lecture (2 hours), laboratory (2 hours). Morphological analysis of the features and processes of coastal zones. Survey of the coastal-zone types of the world. Prerequisite: Geology 128. (Fall—day.)

**241 Geochemistry \* (3)**

The Staff

Lecture (2 hours), laboratory (as arranged). Chemical composition and physical properties of sea water, chemical composition of marine sediments and their alterations, thermodynamics of sea water, biochemical activity in the oceans, methods of analysis and problems of measuring. Prerequisite: Geology 141. Laboratory fee, \$18. (Spring—evening.)

**242 Experimental Geochemistry (3)**

The Staff

Recent advances in geochemistry, instrumental methods and their application. Special topics. Does not repeat itself and can be re-elected for credit. Prerequisite: Chemistry 111, 112; Geology 141. (Spring—evening.)

\* Prerequisite: an adequate background in physics and chemistry, to be determined in conference with the instructor.



- 249-50 **Seminar: Geochemistry (2-2)** The Staff  
Independent topics each semester. Can be elected for either semester. Does not repeat itself and can be re-elected for credit. (Academic year—as arranged.)
- 251-52 **Micropaleontology (4-4)** Sohn  
Lecture (2 hours), laboratory (as arranged). Identification with binocular microscope of Ostracoda and other fossil microorganisms. Micropaleontological techniques, paleontological research methods, taxonomy, and paleoecology. Age determination and correlation of stratigraphic units. Laboratory fee, \$12 a semester. (1966-67 and alternate years.)
- 257-58 **Seminar: Paleontology and Paleoecology (3-3)** The Staff  
Independent topics each semester. Can be elected for either semester. Does not repeat itself and can be re-elected for credit. (Academic year—as arranged.)
- 267-68 **Seminar: Stratigraphy (3-3)** The Staff  
Independent topics each semester. Can be elected for either semester. Does not repeat itself and can be re-elected for credit. (Academic year—as arranged.)
- 295-96 **Research (arr.)** The Staff  
Research on problems approved by the Staff. Open to qualified students with advanced training. Laboratory fee, \$6 a semester hour. (Academic year—as arranged.)
- 299-300 **Thesis (3-3)** The Staff  
(Academic year—as arranged.)

## **Germanic Languages and Literatures**

*Professors* \*W. K. Legner (*Chairman*), J. C. King

*Associate Professor* Klaus Thoenelt

*Assistant Professor* Carl Steiner

### **FIRST GROUP**

- 1-2 **First-year German (3-3)** The Staff  
A year course: credit is not given for the first half until the second half is completed. The essentials of German grammar; translation of easy prose. Three classroom periods a week plus one period of aural-oral practice in electronic language workshop. Workshop fee, \$6 a semester. (*First half:* fall—day and evening; spring—day; summer 1965. *Second half:* fall—day; spring—day and evening; summer 1965.)
- 3-4 **Second-year German † (3-3)** The Staff  
A year course: credit is not given for the first half until the second half is completed. Selections from modern German prose; continuation and review of grammar. Three classroom periods a week plus one period of aural-oral

\* On sabbatical leave fall semester 1965-66.

† With the permission of the instructor, German 9-10 or 51-52 may be undertaken concurrently with German 4.

practice in electronic language workshop. Workshop fee, \$6 a semester. Prerequisite: German 1-2 or two years of high school German. (*First half*: fall—day and evening; spring—day; summer 1965. *Second half*: fall—day; spring—day and evening; summer—1965.)

- 9-10 **German Conversation and Composition \*** (3-3) Steiner  
(Academic year—day; summer 1965.)

- 47 **Beginning German for Reading Examination Candidates** (0) The Staff  
Specifically for graduate students with little or no German, who are preparing for reading examinations. No academic credit. Tuition fee, \$138. (Fall and spring—evening; summer 1965.)

- 49 **German Readings for Nonmajor Students** (3) The Staff  
Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students. Prerequisite: German 4 or 47, or the equivalent. (Fall and spring—evening; summer 1965.)

- 51-52 **Introduction to German Literature \*** (3-3) Thoenelt  
Prerequisite: German 4 or the equivalent. (Academic year—day.)

#### SECOND GROUP

- 103-4 **Goethe's "Faust"—Parts I and II** (3-3) Legner  
(1966-67 and alternate years.)

- 131-32 **German Literature of the 18th Century** (3-3) Thoenelt  
The age of Lessing, Goethe, and Schiller. (1965-66 and alternate years: academic year—day.)

- 141-42 **German Literature of the 19th Century** (3-3) King  
Romanticism, Biedermeier period, Young Germany, Realism. (1965-66 and alternate years: academic year—evening.)

- 151-52 **German Literature of the 20th Century** (3-3)  
(1966-67 and alternate years.)

- 179-80 **Advanced Composition for Undergraduate and Graduate Majors** (1-1) King, Legner  
(Academic year—as arranged.)

#### THIRD GROUP

- 201-2 **Middle High German** (3-3) King, Legner  
(1965-66 and alternate years: academic year—evening.)

- 205-6 **Gothic** (3-3) Legner  
Introduction to the comparative study of Germanic languages. (1966-67 and alternate years.)

- 209-10 **Old High German** (3-3) King  
(1966-67 and alternate years.)

- 213-14 **Old Norse** (3-3) Allee  
(1965-66 and alternate years: academic year—evening.)

\* With the permission of the instructor, German 9-10 or 51-52 may be undertaken concurrently with German 4.

- 223-24 **Linguistic Analysis of Modern German (3-3)** King  
Treatment of phonetics, phonemics, morphology, and syntax. (1966-67 and every third year.)
- 225-26 **Seminar: Linguistics (3-3)** King, Allee  
Bibliography, methodology, readings, and research problems. (1965-66 and every third year: academic year—evening.)
- 227-28 **Sanskrit—Introduction to Indo-European Linguistics (3-3)** King  
Old Indic language and literature. (1966-67 and alternate years.)
- 229 **German Literature of the 15th and 16th Centuries (3)** Legner  
Transition from chivalric to bourgeois literature. The eras of Humanism and the Reformation as reflected in the principal literary works. (Not offered 1965-66.)
- 230 **German Literature of the 17th Century (3)** Legner  
Imitation of foreign models. The literary societies. Preciosity. The beginnings of realism in the novel. Pietism. (Not offered 1965-66.)
- 231-32 **German Classicism (3-3)** Thoenelt  
An advanced study and critique of the literature of the Goethezeit. Prerequisite: German 131-32 or the equivalent. (1966-67 and alternate years.)
- 241-42 **Seminar: German Romanticism (3-3)** Thoenelt  
Treatment of individual writers, groups, motifs, and tendencies. (1966-67 and alternate years.)
- 251-52 **Seminar: Studies in 20th Century German Literature (3-3)**  
Special projects in fiction, drama, poetry, and criticism. (1965-66 and alternate years: academic year—evening.)
- 261-62 **German-English and German-American Literary Relations (3-3)**  
Influence of individual writers, with emphasis on Shakespeare and Goethe. Comparative studies of major genres. Sociology of literature. (Not offered 1965-66.)
- 263-64 **Evolution of the French and the German Novel from the 17th to the 20th Century (3-3)** Thoenelt  
Influences, analogies, and contrasts. Motif and style studies. (Not offered 1965-66.)
- 271-72 **Seminar: German Literature (3-3)** The Staff  
Bibliography, methodology, readings, and research problems. (Not offered 1965-66.)
- 299-300 **Thesis (3-3)** The Staff  
Required of all candidates for the Master's degree in German. (Academic year—as arranged.)



## Government and Business

*Professors* R. D. Kennedy (*Emeritus*), J. L. Jessup, J. C. Dockerau (Chairman), D. S. Brown, F. H. Gibbs, G. C. Jacobus, R. B. Eastin, R. F. Ericson, G. L. Lippitt, Edwin Lewis, \*Waldo Sommers, K. E. Stromsem, Leon Gintzig, C. E. Bradley (*Research*), S. M. Rosen (*Visiting*)

*Professorial Lecturers* S. N. Alexander, C. G. Berns, J. L. Buckler, C. W. Clewlow, L. C. Collins, Frank Higginbotham, C. E. Houston, Robert Kaye, J. L. Krieger, K. F. McClure, Edward McCrensky, J. P. Murphy, F. I. Shaffner, Clark Simpson, I. E. Steele, J. N. Stonesifer, Clark Tibbitts, W. G. Torpey, C. E. Goode, M. H. Schwartz, Tom Kouzes, C. U. Letourneau, Ben Posner

*Associate Professors* F. C. Kurtz, D. R. Cloutier, J. G. Brown, E. W. Camp, J. W. Coughlan, C. M. Mickey (*Research*), J. H. Walters, Jr., J. F. McCarthy, Jr., P. R. Huntley

*Associate Professorial Lecturers* C. M. Campbell, O. C. Disler, J. F. Doubleday, Samuel Humes, George Idelson, V. B. Lewis, J. A. Morrow, Ross Pollock, John Provan, P. C. Tosini, W. W. Brownholtz, E. E. Pontius, Jerome Bracken, Norman Beckman

*Assistant Professors* H. R. Page, G. F. Conner, M. G. Gallagher, D. M. Cook, P. D. Grub, Rosemary Capusan, R. A. Barrett, Chei-Min Paik, W. E. McConville

*Assistant Professorial Lecturers* R. J. Bond, C. J. Brinkman, F. X. McKenna, J. F. Regan, D. E. Russell, L. E. This, J. E. Daly, Jr., Richard Foster, Aladino Gavazzi, O. B. Martinson, R. W. Perkins, J. A. Schaffer, Marjorie Quandt

*Instructor* J. R. Roman, Jr.

*Instructors (part-time)* Charles Eskew, M. M. Dietch, Jr.

## ACCOUNTING

### FIRST GROUP

#### 1-2 Introductory Accounting (3-3)

The Staff

*First half:* basic principles underlying accounting records, preparation of the work sheet and financial statements, accounting for single proprietorships and partnerships. *Second half:* accounting for corporations and introduction to cost accounting, analysis of financial statements, and valuation and amortization problems. Prerequisite to Accounting 2: Accounting 1 or permission of the instructor. (*First half:* fall and spring—day and evening; summer 1965. *Second half:* fall and spring—day and evening; summer 1965.)

### SECOND GROUP

#### 101 Cost Accounting (3)

Paik

Theory and purposes of industrial cost accounting; treatment of systems of cost control and determination; analysis and interpretation of cost data;

\* On sabbatical leave 1965-66.

job, process, and standard cost systems. Prerequisite: Accounting 1-2. (Fall—day and evening; spring—day; summer 1965.)

**111 Financial Statement Analysis (3) Kennedy, Steele**

Methods and techniques of preparing, analyzing, and interpreting financial statements for the guidance of operating executives, directors, stockholders, and creditors; influence of price level changes on accounting data; determination and interpretation of trends and ratios. Prerequisite: Accounting 1-2 or permission of the instructor. (Fall—day; spring—evening.)

**115 Survey of Accounting (3) Gallagher, Paik**

An introduction to the basic principles underlying financial statements and records with emphasis on the use of accounting information in the management process. Study of theory, terminology, cost accounting, and interpretation of financial data. Not open for credit to Accounting majors. (Fall and spring—evening; summer 1965.)

**121-22 Intermediate Accounting (3-3) Kurtz, Simpson**

*First half:* valuation and amortization problems of current assets, long-term investments, tangible fixed assets, intangible assets, and deferred charges; accounting for current, noncurrent, contingent, and estimated liabilities. Prerequisite to 121: Accounting 2 or permission of the instructor. *Second half:* accounting for the organization, financing, operation, and dissolution of corporations and partnerships; basic principles of consignment and installment sales. Prerequisite to 122: Accounting 121 or permission of the instructor. (Academic year—day and evening; summer 1965.)

**132 Accounting Theory (3) Kennedy**

Development of basic accounting principles and concepts with a review of some of the major contributions to accounting literature and with special reference to current thought as reflected in the pronouncements of the American Institute of Certified Public Accountants and the American Accounting Association. Prerequisite: 6 hours of accounting. (Spring—day.)

**141 Governmental Accounting (3) Lewis**

Problems relating to governmental appropriation accounts, encumbrances, and fund accounting. Emphasis on municipal and state government accounting with an introduction to federal accounting. Prerequisite: Accounting 1-2 or permission of the instructor. (Fall—evening.)

**144 Federal Accounting (3) Lewis**

Accounting procedures in the Federal Government, with emphasis on agency level accounts, implementation of accrued expenditure legislation, and accounting support for cost-based budgets. Accounts of United States Treasury; current concepts of allotment, obligation, and disbursement accounting and reporting. Prerequisite: Accounting 141 or permission of the instructor. (Spring—evening.)

**161 Income Tax Accounting (3) Gallagher**

Problems involved in the federal income taxation of individuals and corporations, differences between tax accounting and financial accounting, social security taxes. Prerequisite: Accounting 1-2. (Fall—day and evening.)

**162 Federal Tax Practice (3) Gallagher**

Advanced problems of federal tax practice such as the tax treatment of partnerships, estates, trusts, corporate reorganizations, foreign income, and gifts; use of the tax services; assessment, collection, and refund procedures. Prerequisite: Accounting 161 or permission of the instructor. (Spring—evening.)



**171 Auditing (3)**

Kurtz

Duties and responsibilities of auditors; principles and procedures of making audits, techniques of verifying each financial statement item, preparation of audit working papers and reports. Prerequisite: Accounting 121-22. (Fall—evening.)

**172 Auditing Practice (3)**

Kurtz

A critical study of the standards of audit reporting; an advanced study of certain auditing procedural problems; and a study of current auditing topics to include the application of statistical sampling techniques to auditing, auditing electronic systems, and management advisory services. Prerequisite: Accounting 171 or permission of the instructor. (Spring—evening.)

**181 Accounting Systems (3)**

Lewis

Theory and procedure of designing and installing accounting systems for collecting, recording, analyzing, and presenting accounting data. Prerequisite: Accounting 101, 121-22, and 171, or permission of the instructor. (Fall—evening.)

**191 Advanced Accounting (3)**

Coughlan, Paik

Consolidated statements, statement of affairs, realization and liquidation reports, and estate and trust accounting. Prerequisite: Accounting 121-22. (Fall—evening.)

**193 Business Budgeting (3)**

Lewis, Buckler

Principles, techniques, and procedures involved in the development, installation, and operation of a system of budgetary control to aid in the management of commercial and industrial organizations. Prerequisite: Accounting 1-2. (Fall—day; spring—day and evening; summer 1965.)

**196 Management Decisions and Accounting (3)**

Coughlan, Lewis

An analysis of the information required by management in making capital budgeting, inventory management, and other decisions, and an investigation of the past and prospective ability of the accountant to provide that information. Consideration will be given to the cash-flow and probability data needed by modern management and to advanced cost accounting systems. Prerequisite: Accounting 1-2. (Not offered 1965-66.)

**198 Professional Accounting Review (3)**

Lewis

Review and coordination of the principles and techniques developed in the accounting curriculum, in preparation for general practice in the field of accountancy and for professional accounting examinations. Prerequisite: Accounting 101, 141, 162, 171, and 191, or permission of the instructor. (Spring—evening.)

**THIRD GROUP**

**211-12 Managerial Accounting (3-3)**

Kennedy, Higginbotham

*First half:* analysis of the accounting system with special reference to the use of financial and operating records and accounting reports as tools of management; a study of valuation and amortization problems including the influence of price level changes on accounting data. Prerequisite: Accounting 1-2 or 115. *Second half:* a survey of internal accounting controls, commercial budgets, and cost accounting systems used by management in directing and controlling a business. Prerequisite to Accounting 212: Accounting 211 or permission of the instructor. (Not offered 1965-66.)

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- 215 **Survey of Managerial Accounting (3)** Coughlan, Paik  
Nature, preparation, analysis, and interpretation of accounting reports; study of cost accounting, business budgeting, and internal accounting controls with emphasis on their use in the management process. Prerequisite: Accounting 1-2 or 115 or permission of the instructor. Not available for credit to students taking Accounting 211-12. (Fall and spring—evening.)
- 231 **Contemporary Accounting Theory (3)** Coughlan  
Advanced accounting principles and concepts and recent theories concerned with the valuation and amortization of assets and determination of income. Admission by permission of the instructor. (Fall—evening.)
- 241 **Accounting and Related Disciplines (3)** Coughlan  
A study of the relationship between accounting and such related disciplines as economics, statistical theory, and operations research with emphasis on what the accountant has to offer to these allied fields and to the new ideas and new requirements which these fields may offer to or impose upon accounting. Prerequisite: permission of the instructor. (Not offered 1965-66.)
- 246 **Governmental Accounting and Budgeting Problems (3)** Lewis  
Advanced principles and practices in federal accounting; relationship to general policy and administration. Prerequisite: Accounting 144 or permission of the instructor. (Not offered 1965-66.)
- 275 **Internal Control and Auditing (3)** Coughlan, Kurtz  
Internal accounting controls; review and appraisal of accounting systems, procedures, and managerial policies with respect to their effectiveness and profitableness. Emphasis on the use of internal control and auditing as an aid to management. Prerequisite: Accounting 171 or permission of the instructor. (Not offered 1965-66.)
- 276 **Management Planning and Control (3)** Paik  
Theories and techniques of cost accounting and budgetary planning and control; study of problems arising from application of these theories and techniques to real-world management situations. Emphasized topics: the relation of planning and control systems to corporate and departmental objectives; control of decentralized organization, profit centers, and transfer pricing; control of discretionary costs; long-range planning and control. Prerequisite: Accounting 101 and Business Administration 102 or Business and Public Administration 201, or permission of the instructor. (Summer 1965.)
- 295-96 **Seminar in Accounting (3-3)** Kennedy  
Selected accounting research topics and problems; individual oral and written reports. Admission by permission of the instructor. (Academic year—evening.)
- 297-98 **Accounting Reading and Research (3-3)** The Staff  
(Academic year—as arranged.)
- 299 **Thesis Seminar (3)** The Staff  
(Academic year—as arranged; summer 1965.)
- 300 **Thesis (3)** The Staff  
(Academic year—as arranged; summer 1965.)

## BUSINESS ADMINISTRATION

### SECOND GROUP

- 101 **Introduction to Business (3)** Conner  
The business environment; its effects upon the decision making process. (Fall—day and evening; spring—day; summer 1965.)
- 102 **Fundamentals of Management (3)** Ericson, Conner  
Planning, organizing, directing, coordinating, and controlling the activities of the administrative unit; evolution of management thinking. (Fall and spring—day and evening; summer 1965.)
- 105 **Personnel Management (3)** Eastin, Stonesifer  
Industrial personnel and manpower programs, organizations and policy in personnel activities. (Fall—day; spring—evening; summer 1965.)
- 106 **Problems in Personnel Management (3)** Eastin, Stonesifer  
Principles of manpower management illustrated by cases drawn from business, industry, and government. Prerequisite: Business Administration 105. (Spring—evening.)
- 107 **Labor-Management Contracts (3)** Sommers  
Management's role in the negotiation and administration of collective bargaining agreements, as essential to development of good labor-management relations. (Not offered 1965-66.)
- 109 **Office Management (3)** Dietch  
Organization and layout of an office, use of office machines and appliances, planning and execution of work, supervision problems. (Fall and spring—evening.)
- 113 **Real Estate (3)** Doubleday  
Fundamentals of real estate practice; leasing and property management; valuation, financing, and taxation. (Fall—evening.)
- 118 **Introduction to Data Processing (3)** McCarthy  
Basic principles and methods of data processing. An introduction to the fundamentals, potentials, and problems of automatic data processing for management information systems. (Fall—day.)
- 119 **Data Processing Programming (3)** McCarthy  
Basic principles and methods of computer programming. An introduction to the basic computer programming concepts, and the form and character of instructions and programming schema for the leading types of digital electronic computers. Prerequisite: Business Administration 118 or permission of the instructor. (Spring—evening.)
- 120 **Data Processing Systems (3)**  
Basic principles and methods of data systems analysis, design, and implementation. Emphasis is placed on relationship between equipment systems and management information systems. Prerequisite: Business Administration 118 or permission of the instructor. (Not offered 1965-66.)
- 121 **Property and Casualty Insurance (3)** Doubleday  
A general course in underlying principles of property, life, marine, and casualty insurance, and the function of insurance in the economic life of a business or individual. (Spring—evening.)
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- 122 **Life Insurance and Estate Planning (3)** Campbell  
Life insurance contracts, their use in providing protection and estate development. (Spring—evening.)
- 131 **Business Finance (3)** Page, Roman  
Basic principles involved in the financing of business enterprises. Prerequisite: Accounting 1-2. (Fall—day; spring—day and evening; summer 1965.)
- 136 **Credit Management (3)**  
Types and sources of credit information, credit relationships from the standpoint of the commercial bank and the commercial business enterprise. Prerequisite: Accounting 1-2. (Spring—evening.)
- 138 **Investments (3)** Dockeray, Shaffner  
Analysis of factors of investment credit with application to different types of investments, proper selection of investments for various classes of investors, regulation. Prerequisite: Accounting 1-2, Business Administration 131. (Spring—evening; summer 1965.)
- 141 **Basic Marketing Management (3)** Walters  
An introduction to marketing and marketing management in relation to our total economy and business management, consumer and demand analysis, retailing, wholesaling, major marketing management problems and policies with particular emphasis on major decision areas and tools. Prerequisite: Economics 1-2. (Fall—evening; spring—day; summer 1965.)
- 142 **Marketing Management Problems (3)**  
Practical problems of retailers, wholesalers, and manufacturers considered through the use of cases and text material; fundamental considerations in marketing decisions and the nature of the problem-solving process. Prerequisite: Business Administration 141. (Not offered 1965-66.)
- 143 **Marketing Research (3)**  
Principles and practices of marketing research with particular emphasis upon basic methods and techniques, sources and interpretation of data, and presentation of results. (Fall—evening.)
- 145 **Sales Management (3)**  
Organization of the sales department, sales planning and forecasting, quotas, territories, performance standards, and analysis and control of distribution costs. Prerequisite: Business Administration 141. (Fall—evening.)
- 147 **Advertising (3)** Idelson  
Advertising as a function of marketing and merchandising; uses and limitations of advertising as a tool of management; fundamentals involved in getting a finished advertisement before potential customers; evaluation, criticism, and control of advertising. (Fall—evening.)
- 150 **Procurement and Materials Management (3)**  
Purchasing organization, procedures, and policies; market relationships; selection of merchandise and sources of supply; procurement information and records; evaluation of procurement practices in industry and government. (Spring—evening.)
- 158 **Traffic Management (3)** Kaye  
Organization and records of traffic department, routing of shipments, services by carriers, rates and charges, relation of shipper to transportation agencies. (Spring—evening.)



- 161 **Commercial Law: Contracts, Sales, Agency, and Bailments (3)** Collins, McClure  
(Fall—day and evening.)
- 162 **Commercial Law: Negotiable Instruments, Property, Mortgages (3)** Collins, Murphy  
(Spring—day and evening.)
- 163 **Law in Relation to the Form of Business Units: Corporations, Partnerships, and Trusts (3)** Murphy  
(Fall—evening.)
- 171 **Principles of Transportation (3)** Roman  
Impact of transport on society; development, economic characteristics, services, rates, and regulation of the various modes of domestic intercity transportation. (Fall—evening.)
- 172 **Public Utilities (3)** Roman  
Legal and economic meaning of the public utility concept; development, services, economic characteristics, rate making, and regulation of the various utility industries, with particular emphasis on electric, gas, telephone, and urban transit industries. (Spring—evening.)
- 173 **Commercial Motor Transportation (3)** Roman  
Organization, management, services, economic characteristics, rates, and regulation of motor transport firms; highways and highway financing considered from the point of view of both producers and users of the services. (Not offered 1965–66.)
- 174 **Commercial Air Transportation (3)** Roman  
Organization, management, services, economic characteristics, rates, and regulation of air transport firms; policies and activities of the government in the development, promotion, and control of air transport (Not offered 1965–66.)
- 175 **Introduction to Foreign Trade (3)** Kaye  
Terminology, trade usages and practices, conditions essential to successful trading, economic bases of international trade, obstacles to trade, tariffs, impact of governmental controls on private trade. Prerequisite: Economics 1–2. (Fall and spring—evening.)
- 176 **Exporting and Importing (3)** Kaye  
Policy and operating problems of foreign trade, financing, documentation, packing and transportation of shipments, ocean marine insurance, and U. S. Customs procedure and formalities. (Spring—evening.)
- 177 **Foreign Markets (3)** Grub  
Patterns of World Trade by countries and commodities. Methods of preparing foreign market surveys, selected regional analyses. Prerequisite: Economics 1–2 and Business Administration 141. (Fall—evening.)
- 178 **Management of International Business Operations (3)** Grub  
Analysis of overseas projects according to purpose and type of organization; case studies involving development and management of overseas marketing programs and other operations in different areas of the world. (Spring—evening.)
- 181 **Manufacturing Production (3)** Page  
Basic principles and methods of manufacturing production. Manufacturing
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facilities, plant and equipment. Illustrations selected from various process and fabrication industries. (Spring—evening.)

- 191 **Business Reports and Analyses (3)** J. Brown  
Sources of management information, array and analysis of data, interpretation and presentation of the findings. (Fall—evening.)
- 193 **Management Communication (3)** Eastin, J. Brown  
A survey course in the problems of communication; written communication; style and format; oral communication; oral briefing and presentation; group leadership; rapid reading; completed staff work; and related subjects. (Fall—evening; spring—day.)
- 195 **Controllership (3)** Regan  
The duties, responsibilities, and place of the controller in a business organization; relations of controller to other departments and regulatory bodies; and the controller's relation to price setting and inventories, depreciation policies, internal auditing, expense control and budgeting; and financial reports to management, stockholders, and employees. Prerequisite: Accounting 1-2. Open to seniors. (Fall—evening.)
- 198 **Case Problems in Management (3)** Eastin, Page  
Principles and techniques of management illustrated by cases drawn from business and industry. Prerequisite: Business Administration 102, 105, 131, 141. (Fall and spring—day and evening.)

### THIRD GROUP

- 209 **Seminar: Personnel Management (3)** Eastin  
Discussion of industrial personnel and manpower management, and research in advanced problems. (Fall—evening; summer 1965.)
- 210 **The Personnel Manager (3)** Jessup  
The job of the personnel manager and his place in the organization; relations of the personnel manager to other executives; the personnel manager's policy role, and his relations with the chief executive. Key problems of the senior personnel executive. (Spring—evening.)
- 211 **Personnel Management and Industrial Relations (3)** Barrett  
A survey of personnel management practices and procedures, including labor-management relations. (Fall—day.)
- 218 **Survey of Data Processing (3)** McCarthy, Daly  
A survey of modern data processing systems with emphasis on the management problems associated with the installation and use of such systems. (Fall and spring—evening.)
- 219 **Digital Computer Programming Concepts (3)** McCarthy, Schwartz  
Machine functions and programmed control, instructions and programs, sub-routines, general purpose programming, business oriented programming languages. Prerequisite: Business and Public Administration 204 or permission of instructor. (Fall—evening.)
- 220 **Comparative Digital Computer Systems and Their Management (3)** McCarthy, Schwartz  
Properties and capacities of the range of data processing equipments in use today, special purpose equipments in business, recent and prospective equipment developments. Fundamentals of data processing installation management. Prerequisite: Business Administration 218 or 219, or permission of the instructor. (Spring—evening.)



- 221 **Management Information Systems Development and Application (3)** McCarthy, Schwartz  
The analysis and design of management information systems; the integration of data processing in the regular operations of the government or business organization, and its impact on management organization and decision making. Management's part in systems planning is emphasized. Prerequisite: Business Administration 218 or 219, or permission of the instructor. (Fall—evening; summer 1965—offered as *Application of Digital Computers*.)
- 222 **Seminar: Advanced Digital Computer Concepts (3)** Alexander  
Study of advanced problems in the design and application of computer systems. (Spring—evening.)
- 227 **Linear Programming (3)** Bracken  
Introduction to the vocabulary and methodology of management science through the study of linear programming techniques. Case studies. Prerequisite: Business and Public Administration 204. (Fall—evening.)
- 228 **Introduction to Operations Research for Management (3)** Bracken  
Operations research as an approach to the solution of management problems. Emphasis is on the relevance and limitations of operations research. Practical applications are examined. Prerequisite: Business and Public Administration 204. (Spring—evening.)
- 231 **Corporate Financial Problems (3)** Dockeray, Houston  
Financial practice in promotion, consolidation, and mergers; capital structure adjustments; and reorganization. (Fall—evening; summer 1965.)
- 232 **Seminar: Business Finance (3)** Dockeray, Houston  
Research in advanced financial problems. (Spring—evening.)
- 237 **Investment Analysis (3)** Dockeray, Shaffner  
An advanced course in the applications of investment principles and analytical techniques to the selection of investments. Prerequisite: Business Administration 138. (Fall—evening.)
- 238 **Seminar: Investments (3)** Dockeray, Shaffner  
Research in investment problems, techniques of selection and the management of various types of funds. Prerequisite: Business Administration 138. (Spring—evening.)
- 241 **Advanced Marketing Management (3)** Walters  
Marketing management problems and policies in major decision areas of product planning, channels of distribution, advertising, personal selling, sales promotion, pricing, and development of integrated marketing programs. Marketing research and other tools useful in decision making. Case analysis. (Fall—evening; summer 1965.)
- 242 **Seminar: Marketing Theory (3)** Walters  
Critical review of the development of marketing thought and important marketing literature. Special and current problems and/or trends in marketing and their impact on the firm and society. Prerequisite: Business Administration 241. (Spring—evening.)
- 243 **Advanced Marketing Research (3)**  
Marketing research as an aid to decision making and increased efficiency in marketing, marketing research process, critical appraisal of methods and



results, applications of marketing research. Cases, selected readings, and research projects. Prerequisite: a course in basic statistics. (Spring—evening.)

- 247 **Advertising Management (3)** Walters  
Case studies and text material dealing with executive determination of advertising organization, basic strategy relative to marketing program, promotional program, advertising appropriation, preparation and scheduling of advertisements, media selection, and determination of effectiveness. Advertising research and economic and social aspects. (Fall—evening.)
- 248 **International Marketing (3)** Walters  
Organization for international marketing, foreign demand analysis, product development and policies, marketing structure and trade channels, advertising and promotion problems and policies, pricing, credits and collections, and legal aspects. Particular emphasis on development of effective international marketing strategy. (Spring—evening.)
- 250 **Procurement and Contracting (3)**  
An examination of the business aspects of federal procurement and contract management. (Not offered 1965-66.)
- 251 **Retail Management (3)**  
Managerial problems and policies concerning financing, location, organizational structure, merchandise policies, advertising and sales promotion, personnel management, operating and service policies, accounting and control, and other related retail management problems. Case analysis. (Fall—evening.)
- 255 **Seminar: Foreign Trade I (3)** Grub  
Research; analysis and discussion of foreign trade institutions, public and private; principles and theories of international trade; United States trade and Western hemisphere problems. (Fall—evening.)
- 256 **Seminar: Foreign Trade II (3)** Grub  
Problems of economic integration with emphasis on the European Economic Community, United States foreign trade policy, study of international business management problems, development of executives for international operations. (Spring—evening.)
- 261 **Business Economics I (3)** Huntley  
Applications in economic analysis. Uses economic theory and statistics for establishment of criteria for business decisions involving policies on profits, prices, production, investments, and inventories. Prerequisite: Economics 217 and Statistics 111-12 or the equivalent, or consent of the instructor. (Fall—evening.)
- 262 **Business Economics II (3)** Huntley  
Utilizes statistical techniques and aggregate economics for appraising economic forecasts and making business forecasts. Prerequisite: Economics 218 or the equivalent, or consent of the instructor. (Spring—evening.)
- 265 **Business Economics III: Advanced Topics in Managerial Economics (3)** Huntley  
Case studies and problems in use of economic statistics, operations analysis, and other developing techniques in mathematics applied to empirical business decisions. Prerequisite: Business Administration 261 and 262, or consent of the instructor. (For doctoral students planning to write dissertations in this field.) (Not offered 1965-66.)

- 273-74 **Readings in Business (3-3)** The Staff  
Advanced readings in the fields of finance, marketing, and personnel management. Admission by permission of the instructor. (Academic year—evening.)
- 286 **Management in the Armed Forces (3)** Jessup  
Special problems of military organization and management; applicability of business management techniques to the armed forces. (Not offered 1965-66.)
- 288 **Executive Leadership (3)** Krieger  
Examination of principles and problems of executive leadership and development; intensive consideration of basic issues and guides to executive action in business and public administration; review of the literature, significant research findings, and practical illustrations. (Fall—evening.)
- 291 **Seminar: Business Management (3)** Ericson  
Research on various phases of management as practiced in American industry. (Fall and spring—evening.)
- 293-94 **Business Research (3-3)** The Staff  
(Summer 1965.)
- 296 **Seminar: Controllershship (3)** Stromsem  
Research on advanced problems of financial analysis and management. (Spring—evening.)
- 297 **Case Studies in Business Administration (3)** Jessup  
Problems of management are analyzed with the view of developing a practical solution; cases are used to show the problems of personnel in marketing, industrial management, finance, etc. (Fall and spring—evening.)
- 299 **Thesis Seminar (3)** Dockeray and Staff  
An examination of thesis standards, research philosophy, and methodology. (Fall and spring—evening; summer 1965.)
- 300 **Thesis (3)** The Staff  
(Fall and spring—as arranged; summer 1965.)

## BUSINESS AND PUBLIC ADMINISTRATION

### THIRD GROUP

- 201 **Advanced Administrative Management (3)** Eastin, Ericson  
An advanced course in administration emphasizing principles and practices common to administrative units of all kinds. (Fall—day and evening; spring—evening; summer 1965.)
- 204 **Quantitative Factors in Administration (3)** Bradley, Tosini  
Developments in quantitative methods of administration. (Fall and spring—evening; summer 1965.)
- 205 **Seminar: Communication and Executive Action (3)** Morrow  
Seminar in the communication processes. Research and analysis, identification of factors relating to receptivity; the dynamics of communication. (Spring—evening.)

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- 206 **Personnel Management (3)** Torpey  
Basic principles; structure and organization of personnel offices; responsibilities; interagency relationships; personnel staffing, training, and work measurement. (Fall—evening.)
- 207 **Human Factors in Administration (3)** Eastin, Ericson, Pollock  
Individual, group, intergroup, and other human behavior and development; application of social science research to administration. Practical applications will be emphasized. (Fall—evening; summer 1965.)
- 208 **Current Issues in Organizational Behavior (3)** Lippitt  
A study of such current issues as automation, ethics, labor-management relations, and similar problems that affect the human organization. Students will do field research projects on these issues. Prerequisite: Business and Public Administration 207. (Summer 1965—offered as *Human Factors in Administration*.)
- 209 **Colloquium in Behavioral Sciences (3)** Lippitt  
Supervised study in depth and field projects in the behavioral sciences. Primarily for doctoral students. (Fall—evening.)
- 262 **Contemporary Administrative Theory and Practice (3)** Ericson  
Current theories and trends in management with particular attention to the behavioral sciences communications and applicability of research. (Spring—evening.)
- 268 **Management Engineering (3)** Clewlow  
Analysis of the techniques for initiation and implementation of management engineering programs, with emphasis on organization and methods surveys including the study of work measurement, work simplification, management audits, and other management improvement programs. Not open to students who have taken Business and Public Administration 269. (Fall and spring—evening.)
- 269 **Management and Information Systems (3)** Page  
A survey course: the collection and processing of management information, management engineering, work simplification, development of methods, procedures, and systems; systems analysis. Not open to students who have taken Business and Public Administration 268. (Fall—day and evening.)
- 287 **Relation of Government to Business (3)** Cloutier  
Activities of government in their relation to business management in such areas as labor relations, wages, production, and prices. Trend and change in economic activity and its bearing upon government policy. (Spring—evening.)

## HEALTH CARE ADMINISTRATION

### SECOND GROUP

- 153-54 **Survey of Health Care Organization and Procedures (3-3)**  
(Formerly Health Care Administration 150-51)  
Lectures and discussions. (May be audited.) Primarily for students in Continuing Education in Health Care and related fields or medical care organizations who wish an over-all knowledge of organization and procedures used in hospitals, long-term care facilities such as nursing homes, and homes for the aged. This is a two-semester sequence. (Not open to degree



candidates in Health Care Administration.) Students wishing to take the course for graduate credit must take the Health Care Administration 203 laboratory. (Academic year—evening.)

### THIRD GROUP

- 202 **Introduction to Health Care Administration** (3)  
Lecture and discussion (2 hours), laboratory (2 hours). Survey of community health services, public health organizations, voluntary agencies, and private practitioners (with attention to state and national health resources); medical terminology, communicable diseases, environmental sanitation, and biostatistics. (Fall—day and evening.)
- 203 **Organization and Management** (3) Gintzig, Cook  
Lecture and discussion (2 hours), laboratory (2 hours). The history and current character of institutional health care. Organizational functions and structure of various kinds of hospitals and clinics, including long-term care facilities such as mental hospitals, homes for the aged, nursing homes, and others related to health care administration. (Fall—day and evening.)
- 204 **Health Care Administration Planning and Support Agencies and Associations** (3) The Staff  
The functions performed and special support techniques of hospital, medical, public health, nursing home, planning, educational, and similar associations. (Fall or spring—as arranged.)
- 205 **Hospital Management Procedures** (3) Cook, Letourneau, Schaffer, Gavazzi  
Lecture and discussion (2 hours), laboratory (2 hours). A survey of hospital law; a study of hospital forms, procedures, and systems; hospital programs pertaining to disaster relief, safety, fire prevention; personnel, purchasing, and volunteer services; and the operational peculiarities of hospital departments. (Fall—as arranged; spring—day and evening.)
- 206 **Case Studies in Health Care Administration** (3) Gibbs  
Discussion (2 hours), laboratory (2 hours). General ideas about administration as applied to practical cases. Emphasis on policy making, planning, controlling, and organizing in hospitals. It includes case applications of Health Care Administration Law. Prerequisite: Business and Public Administration 201 and Health Care Administration 203. (Spring—day and evening.)
- 207 **Management Analysis in Health Care Institutions** (3) Gintzig  
Lecture (2 hours), laboratory (2 hours). Basic investigation and problem solving techniques, including various methods of collecting, analyzing, reporting, and using information that can be made available to administrators of hospitals and other medical care institutions. Part of this time is devoted to an investigation on which written and oral reports are based. (Spring—as arranged.)
- 209 **Health Care Economics** (3) Camp  
Lecture (2 hours), laboratory (2 hours). Health care economics including an appreciation of: the nature and characteristics of the consumers and providers of health care, the costs and expenditures involved, health prepayment and insurance programs, the impact of social and economic factors on the health care institution. (Fall—as arranged; spring—day and evening.)
- 212 **Planning and Constructing Health Care Facilities** (3) Cook  
Lecture (2 hours), laboratory (2 hours). Regional and specific aspects of

long- and short-term health care planning, designing, constructing, purchasing, equipping, and supplying. Prerequisite: Health Care Administration 202 and 203. (Spring—day and evening.)

- 213 **Administration of Health Care Systems (3)** The Staff  
The various patterns of hospital and health care such as church ownership, proprietary, group practice, Salvation Army, governmental, industrial, unions, nursing homes, community, and their special characteristics. (Fall or spring—as arranged.)
- 221–22 **Fundamentals of Medical Science and Medical Terminology (3–3)** Quandt  
A study of the fundamentals of medical science and medical essentials presented through lectures in the medical specialties. Includes a study of terms related to all areas of medical science, hospital service, and the paramedical specialties. (Academic year—day and evening.)
- 223–24 **Introduction to Health Records Administration (3–3)** Quandt  
Lecture and discussion (2 hours), laboratory (2 hours). History of medical records, report preparation, coding and indexing procedures, ethics, methods of securing and preserving medical records, and medical record practices and procedures in areas such as radiology, pathology, outpatient department, and social services. (Academic year—day and evening.)
- 225–26 **Principles and Problems of Health Records Administration (3–3)** The Staff  
Lecture and discussion (2 hours), laboratory (2 hours). Research techniques and qualitative analysis pertaining to medical records. Ethics involved in handling records. Problems encountered in medical record departments in hospitals, clinics, and other essentially medical facilities. (Academic year—day and evening.)
- 229 **Health Records Administration Internship (3)** The Staff  
Four-month internship beginning in June of each year, in approved medical facilities under qualified medical records administrators. A final written report of a major work project, assignments for directed practical experience and practice in the use of standard equipment found in medical records departments.
- 250 **Administration for Mental Care (3)** The Staff  
Special characteristics of administration required in mental hospitals, psychiatric sections of general hospitals, and others. (As arranged.)
- 260 **Administration for Long-term Care Facilities (3)** Capusan  
A survey of the medical and nursing procedures designed for administrators of long-term care facilities including nursing homes and facilities for the aged. (Fall—evening.)
- 261 **Business Procedures for Long-term Care Facilities (3)** Capusan  
Business procedures with special application to administration of facilities for long-term care including nursing homes and homes for the aged. (Spring—evening.)
- 265–66 **Readings in Long-term Care Administration (3–3)** The Staff  
(Formerly Health Care Administration 262–63)  
Advanced studies in selected aspects of administration of long-term care facilities, including nursing homes, homes for the aged, and others. (As arranged.)



- 267 **Social Gerontology for the Administrator** (3) Tibbitts, Mickey  
The special characteristics of the elderly with which administrators of long-term care facilities should be acquainted. (Fall—evening.)
- 270 **Research in Health Care Administration** (3) The Staff  
Field research in health care administration. Student investigates some phase of health care administration. Primarily for doctoral students. Open to other graduate students with the consent of the instructor. (Fall or spring—as arranged.)
- 285-86 **Readings in Health Care Administration** (3-3) The Staff  
Supervised readings in some special areas or subdivisions of health care administration. Primarily for doctoral students. Open to other graduate students with consent of the instructor. (Academic year—as arranged; summer 1965.)
- 287 **Seminar: Integration of Health Care Administration** (3) The Staff  
Primarily for doctoral students. (Fall or spring—as arranged.)
- 288 **Seminar: Field Problem Studies in Health Care Administration** (3) The Staff  
Selected administrative issues and problems arising in health care facility situations are discussed and evaluated. (Fall or spring—as arranged.)
- 293-94-95 **Residency I** (3-3-3) Camp, Gibbs, Cook  
Twelve-month residency, beginning each year June 1 or July 1. Work experience under a qualified preceptor, periodic seminars with the University staff, periodic written progress reports, and a written major report. (Other courses may be substituted for Health Care Administration 294-95 as appropriate.)
- 296-97-98 **Residency II** (3-3-3) Gibbs  
For selected students who take a second twelve-month residency.
- 299-300 **Thesis** (3-3) The Staff

## PUBLIC ADMINISTRATION

### THIRD GROUP

- 213 **Administration in Government** (3) D. Brown, Cloutier  
A critical analysis of federal administrative organizations, their achievements and pathologies. The roles of Congress, the Presidency, the Courts, interest groups, political parties, and the public in the administrative process are studied with special attention to centripetal and centrifugal forces at work. (Fall—day and evening; spring—evening; summer 1965.)
- 215 **Comparative Administrative Systems** (3)  
Examination and analysis of the administrative systems of the major foreign governments with particular attention to practices applicable to administration in the United States. (Fall—evening.)
- 216 **Administration of International and Supranational Activities** (3)  
Analysis of the evolution and application of the administrative process in selected international and supranational activities. Problems of organization and management in multi-national supported and staffed activities. Prerequisite: Public Administration 215. (Spring—as arranged.)

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- 217 **Seminar: Developmental Administration (3)** D. Brown  
Examination of the theories of the transfer of administrative capability from one country to another, factors relating to the indigenous culture, strategies of aid, examination of specific national and supranational programs. (Fall—evening.)
- 221 **Management in the Executive Branch (3)**  
Analysis of the application of organizational theories and practices in the Executive Branch of the Federal Government with particular emphasis on staff responsibilities and relationships and internal organization and control. Special problem areas are examined. (Spring—evening.)
- 225-26 **Internship in the Administrative Processes (3-3)** Sommers  
This course is open only to persons selected by government agencies for participation in approved intern programs. (Academic year—as arranged.)
- 232 **Federal Personnel Procedures (3)** Torpey  
Study of such personnel functions as recruitment, selection, placement, promotion, supervision, evaluation, classification, and training. Practical problems of personnel administration. (Spring—evening; summer 1965.)
- 233 **Seminar: Manpower Development and Utilization (3)** Sommers  
Research projects and case studies in ways and means of increasing employee potential, use of training programs, executive development, incentive systems. (Fall—evening.)
- 243 **Local Government Law \* (3)** Pock  
The decision-making processes in metropolitan and local communities; types and objectives of city, county, and special function local government units; intergovernmental units; intergovernmental relations; original organization and changes; local lawmaking; community planning and development. (Fall—day and evening.)
- 246 **Urban Dynamics (3)** Beckman  
(Formerly Business Administration 213)  
Background course for the developing curriculum in city planning. The course traces the forces that lie behind investment decisions which in turn determine the development of cities. (Spring—evening.)
- 249 **Administration in Metropolitan Area Governments I (3)** Cloutier  
(Formerly Public Administration 244)  
Examination of public administration at the local level. Developments and trends growing out of the changing urban pattern. (Fall—evening.)
- 250 **Administration in Metropolitan Area Governments II (3)**  
Examination of the increasingly complex planning and governmental problems of large metropolitan regions. Prerequisite: Public Administration 249. (Spring—evening.)
- 251 **Governmental Budgeting (3)** Posner  
The role of budgeting in management; the principles and practices of budgetary formulation and administration. (Fall and spring—evening; summer 1965.)
- 252 **Seminar: Planning and Programming (3)** Page, McConville  
The administrative processes of planning and programming in government,

\* Same as Law 349.

relationships to budgeting, planning and programming as a basis of managerial control, evaluation of accomplishments. (Fall—evening.)

- 254 **Financial Management in the Federal Service** (3) Krieger  
Function of financial management in federal agencies; special problems analyzed; comparison of the financial management (controllership) function in government and business. (Spring—evening.)
- 260 **Seminar: Policy Formulation and Administration** (3) D. Brown  
Development of agency goals and objectives and administration of agency policies; influence of individuals upon them; factors involving informal organization and role of executive in furthering administrative policy. (Spring—evening.)
- 261 **The Public and the Administrator** (3) Stromsem  
The nature of the public interest, ways of determining public opinion, public opinion and the decision-making process, theories and methods of working with the public, interest groups, public relations and information programs. (Fall—evening.)
- 271 **Readings and Conferences in Public Administration** (3) The Staff  
Advanced directed reading in specific areas of public administration. (Fall—evening.)
- 272 **Seminar: Public Personnel Administration** (3) Sommers  
Advanced directed reading in specific areas of public personnel administration. (Spring—as arranged.)
- 273 **Colloquium in Public Administration and American Political and Social Institutions** (3) Cloutier  
Supervised study in depth of contemporary literature in selected fields. Primarily for doctoral students. (Fall—evening.)
- 295 **Seminar: Urban Housing \*** (3)  
Consideration of housing problems growing out of increasing urban populations. (Fall—day.)
- 296 **Fundamentals of Urban Design \*** (3)  
Principles of urban design and arrangement, traffic flow, use of space to achieve urban efficiency with maximum visual amenity. (Fall—day.)
- 297 **Seminar: Public Administration** (3) The Staff  
Advanced research on selected phases of public administration. (Fall and spring—as arranged; summer 1965.)
- 298 **Case Studies in Public Administration** (3) Cloutier  
(Formerly Public Administration 212)  
Analysis and discussion of problems in public management by use of the case method. (Spring—evening; summer 1965.)
- 299 **Thesis Seminar** (3) The Staff  
An examination of thesis standards, research philosophy, and methodology. (Fall and spring—evening; summer 1965.)
- 300 **Thesis** (3) The Staff  
(Fall and spring—as arranged; summer 1965.)

\* Offered by Virginia Polytechnic Institute on The George Washington University campus. Open to qualified GWU students.

## Greek

See "Classical Languages and Literatures"

## Hebrew

See "Classical Languages and Literatures"

## History

*Professors* E. L. Kayser, \*Wood Gray, H. M. Merriman, R. H. Davison, W. C. Davis, R. B. Thompson (*Chairman*), R. C. Haskett, R. P. Sharkey

*Professorial Lecturers* R. P. Multhauf, G. O. Kent, W. F. Cannon

*Associate Professors* R. A. Naylor (*Visiting*), C. J. Herber, R. W. Kenny, Michael Gasster, H. M. Sachar

*Associate Professorial Lecturers* J. I. Robertson, Jr., R. B. Simons, L. G. Schwoerer, P. H. Stoddard

*Assistant Professor* P. P. Hill

*Assistant Professorial Lecturers* Virginia Purdy, C. M. Bacon

### FIRST GROUP

- 39-40 **The Development of European Civilization in Its World Context (3-3)** Kayser, Herber, Kenny, Simons

Primarily for freshmen. *First half*: the political, social, economic, and cultural history of the Old World from ancient times to 1715. *Second half*: from 1715 to the present. (Academic year—day and evening; summer 1965.)

- 71-72 **The Development of the Civilization of the United States (3-3)** Hill

Primarily for sophomores. *First half*: the political, social, economic, and cultural forces of the United States in their world setting from 1492 to 1865. *Second half*: from 1865 to the present. (Academic year—day and evening; summer 1965.)

### SECOND GROUP†

- 105-6 **Introduction to the History of Science (3-3)** Multhauf

*First half*: the ancient natural philosophy and the growth of special sciences through the 17th-18th century scientific revolution. *Second half*: the main lines of development of astronomy, physics, chemistry, biology, and medicine

\* On sabbatical leave fall semester 1965-66.

† History 39-40 is prerequisite to courses 109 through 152 and 187 through 196; History 71-72, to courses 170 through 184; either History 39-40 or 71-72, to courses 161 through 166. Prerequisite to History 105-6 is either History 39-40 or a background in a science.



from the mid-18th century to the scientific revolution of the early 20th century. Prerequisite: History 39-40 or a background in science. (Academic year—evening.)

**109-10 Ancient History (3-3)**

Kayser

The political, social, and intellectual aspects will be considered. *First half:* the ancient Near East and Greece. *Second half:* Rome. (Academic year—day.)

**111-12 Medieval History (3-3)**

The political, social, and intellectual aspects will be considered. *First half:* from the 4th to the 12th century. *Second half:* from the 13th through the 16th century. (Academic year—day.)

**121 The Renaissance in Western Europe (3)**

Schwoerer

Political, economic, intellectual, and cultural features of the Renaissance, 14th-16th centuries. Focus on Italy, but with attention to developments in France and England. (Fall—day.)

**130 Nationalism (3)**

Kayser

The historical evolution of modern nationalism. (Summer 1965.)

**131-32 History of Germany (3-3)**

Herber

The political, social, and cultural development of the German people. *First half:* from the Reformation to 1871. *Second half:* from 1871 to the present. (Not offered 1965-66.)

**137 History of Soviet Foreign Policy (3)**

Elliott

(Fall—day.)

**139-40 The Modern World: World History in the 20th Century (3)**

Sachar

*First half:* 1914 to Munich. *Second half:* Munich to the present. (Academic year—day.)

**141-42 History of France (3-3)**

Herber

A survey of the political, social, and cultural history of France. *First half:* from earliest times to 1815. *Second half:* from 1815 to the present. (Academic year—day.)

**145-46 History of Russia (3-3)**

Thompson

An 1100-year survey of the rise and revolution of Russia. *First half:* Russia under the Old Regime, 860-1900. *Second half:* Revolution and Soviet rule, 1900-1960. (Academic year—day.)

**147 Economic History of Europe \* (3)**

Sharkey

European economic development since the Middle Ages with particular emphasis on the period following the Industrial Revolution. The evolution of capitalism and its varying impact upon the societies of Europe will be treated. (Fall—evening.)

**149-50 European Diplomatic History (3-3)**

Davison

Background of the European state system and of diplomatic practices and relations since the Congress of Vienna, with emphasis on the policies and actions of the great powers and their statesmen. *First half:* to 1878. *Second half:* since 1878. Students cannot receive credit for both History 150 and History 153. (Academic year—evening.)

\* An interdepartmental course offered by the departments of History and Economics. Students may register in either department.

- 151-52 **History of England and Great Britain (3-3)** Kenny  
A general survey of the development of English civilization and its impact on Western culture. *First half:* to 1660. *Second half:* since 1660. (Academic year—day; summer 1965—History 152 (3).)
- 153 **European Diplomatic History in the 20th Century (3)** Sachar  
The main currents of European Diplomatic History in the 20th century with necessary 19th century background incorporated as needed. Students cannot receive credit for both History 153 and History 150. (Fall—day.)
- 161 **Ancient Americans (3)** Davis  
A study of the Maya, Aztec, Inca, and other early civilizations of North and South America. (Summer 1965.)
- 162 **Iberian Background of Latin America (3)** Davis  
History of Spain and Portugal, with emphasis on developments leading to the rise and decline of the Spanish and Portuguese empires. (Summer 1966.)
- 163 **Colonial Latin America (3)**  
Political, economic, social, and institutional developments in Spanish and Portuguese America from the conquest through the wars of independence. (Fall—evening.)
- 164 **South America since Independence (3)** Davis  
Development of the independent South American states in the 19th and 20th centuries. (Summer 1966.)
- 166 **Mexico and the Caribbean since Independence (3)**  
A survey of the republics of Mexico, Central America, and the Caribbean islands. (Spring—evening.)
- 170 **American Colonial History (3)** Haskett  
The settlement of the British colonies, the development of provincial institutions, and the emergence of an American civilization in the 17th and 18th centuries. (Not offered 1965-66.)
- 171-72 **Social History of the United States (3-3)** Gray  
Daily life, institutions, intellectual and artistic achievements of the Agrarian Era, 1607-1861; and the Urban-Industrial Era, 1861 to the present time. (Academic year—day.)
- 173 **Representative Americans (3)** Gray  
A biographical approach to national history. Some thirty significant and pivotal personalities in the development of the United States in government, business, science, religion, journalism, the arts, and social reform. (Fall—day; summer 1965.)
- 175-76 **Political and Constitutional History of the United States (3-3)** Haskett  
*First half:* to the eve of the Civil War. *Second half:* the Civil War to 1940. (Academic year—day; summer 1965—History 175 (3).)
- 177 **The South (3)** Robertson  
Rise of the plantation system and slavery; the intersectional conflict; and the problems and progress of the New South. (Fall—day.)

- 178 **The Civil War (3)** Robertson  
(Formerly History 179)  
A survey of the causative factors leading to Civil War and of the social, political, military, economic, and diplomatic aspects of the War itself; the immediate and long-range effects of the War on American life. (Spring—day.)
- 179-80 **Economic History of the United States \* (3-3)** Sharkey  
(Replaces former History 174)  
An analysis of the process of economic growth in the United States from Colonial times to the present. The development of various sectors in the economy such as agriculture, transportation, manufacturing, and banking will be treated and their interdependence stressed. *First half:* 1607 to 1865. *Second half:* 1865 to the present. (Academic year—evening.)
- 181-82 **Diplomatic History of the United States (3-3)** Merriman, Hill  
Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; and the activities of the American secretaries of state and diplomatic agents. *First half:* to 1898. *Second half:* since 1898. (Academic year—day and evening; summer 1965—History 182 (3).)
- 183 **Oversea Expansion of the United States (3)** Merriman  
The political, economic, social, and cultural life of our outlying possessions. (Spring—day.)
- 184 **Canada and the United States (3)** Merriman  
The historical background and main trends in the relationship of the two English-speaking peoples of North America. (1966-67 and alternate years.)
- 187 **History of Modern China (3)** Gasster  
China since 1840, with particular attention given to political developments. (Fall—evening.)
- 188 **East Asia in World Affairs (3)** Gasster  
The history of Chinese and Japanese relations with the West, emphasizing the roles of China and Japan in international politics from the middle of the 19th century to the present. (Not offered 1965-66.)
- 189 **History of India (3)** Thompson  
(Formerly History 190)  
The civilization of India and her neighbors from the beginnings to independence. (Not offered 1965-66.)
- 190 **Modern India (3)** Hinton  
Basic characteristics of traditional Indian history and civilization, achievements and failures of British rule under the East India Company and the Crown, the resurgence of tradition and the rise of nationalism, progress toward self-government, partition and independence, achievement and problems of independent India and Pakistan. (Not offered 1965-66.)
- 193 **History of the Near East (3)** Davison  
The Byzantine, Arab, Persian, and Islamic backgrounds of Near Eastern history; the rise and decline of the Ottoman Empire; the action of European powers in the area; and the Ottoman breakup into the Turkish Republic and other successor states. (Fall—evening.)

\* An interdepartmental course offered by the departments of History and Economics. Students may register in either department.



195-96 **History of East Asia (3-3)** Gasster

The civilizations of China and Japan, with emphasis on cultural development and social organization. *First half:* from the beginnings to about 1800. *Second half:* the traditional societies on the eve of the modern era, and their responses to Western cultural influences since the middle of the 19th century. (Academic year—day.)

197-98 **Proseminar: Latin American Civilization \* (3-3)** Davis, Robb, Sammons

Reading course for coordination and review. Open only to majors in Latin American Civilization. (Academic year—as arranged.)

199-200 **Proseminar: Readings for the History Major \* (3-3)** Thompson, Herber

Limited to majors in History. Readings and discussions on major trends in the history of Western civilization, taken in their world setting, and including representative selections from the classics of historical literature. Students cannot receive credit for both History 199-200 and History 201-2. (Academic year—day and evening.)

**THIRD GROUP**

201-2 **History and Historians (3-3)** The Staff

Students cannot receive credit for both History 201-2 and History 199-200. (Academic year—as arranged.)

203-4 **Seminar \* (3-3)** The Staff

Prerequisite: approval of the Department. (Academic year—as arranged; summer 1965.)

241-42 **Seminar: Modern European History \* (3-3)** Herber

Prerequisite: appropriate preparation and consent of the instructor. (Academic year—evening.)

244 **Seminar: History of the Comintern (3)** Thornton

Activities of the Communist Third International, its sponsorship of revolution and its decline and subservience to the Soviet State. (Fall—evening.)

245-46 **Seminar: Russian History \* (3-3)** Thompson

Prerequisite: History 145-46 or the equivalent. (*First half:* fall—day. *Second half:* not offered 1965-66.)

248 **Seminar: Balkan Question in Modern History \* (3)** Sachar

(Spring—evening.)

249 **Seminar: European Diplomatic History \* (3)** Davison

Prerequisite: History 149-50 or the equivalent. (Spring—day.)

251-52 **Seminar: English History \* (3-3)** Kenny

Prerequisite: History 151-52 or the equivalent. (Academic year—evening; summer 1965—History 251 (3).)

\* Students who plan to register for proseminars, seminars, or reading courses should confer with the individual instructor as early as possible in the semester prior to enrollment, in order to receive the approval of the instructor and to reserve space in the course; students should also arrange with the instructor to receive reading lists, instructions, and advance assignments.

- 261-62 **Seminar: Latin American History \*** (3-3)  
Prerequisite: six semester hours selected from History 161, 162, 163, 164, 166. (Academic year—day.)
- 266 **Reading Seminar: Contemporary Latin America** (3) Naylor  
Includes an analysis of socioeconomic, political, philosophical, and technological problems and prospects of present-day Latin America. Prerequisite: appropriate preparation and consent of the instructor. (Spring—evening.)
- 271-72 **Seminar: Social History of the United States \*** (3-3) Gray  
Prerequisite: History 171-72 or the equivalent. (Academic year—day; summer 1965—History 272 (3).)
- 275-76 **Seminar: American Political and Constitutional History \*** (3-3) Haskett  
Prerequisite: History 175-76 or the equivalent. (Academic year—day.)
- 281-82 **Seminar: Diplomatic History of the United States \*** (3-3) Merriman  
Prerequisite: History 181-82 or the equivalent. (Academic year—day.)
- 283-84 **Seminar: United States since 1900 \*** (3-3) Hill  
Prerequisite: History 181-82 or the equivalent. (Academic year—day; summer 1965—History 283 (3).)
- 292 **Research Seminar: Palestine Question in Modern History \*** (3) Sachar  
(Fall—evening.)
- 293 **Seminar: History of the Modern Near East \*** (3)  
Prerequisite: History 193 or the equivalent. (Not offered 1965-66.)
- 295-96 **Seminar: History of the Modern Far East \*** (3-3) Gasster  
Prerequisite: History 195-96 or the equivalent. (First half: not offered 1965-66. Second half: spring—day.)
- 299-300 **Thesis** (3-3) The Staff  
Required of all candidates for the Master's degree specializing in history. (Academic year—as arranged; summer 1965.)
- FOURTH GROUP\*\***
- 311-12 **Reading Course in Medieval History** (3-3)  
(Academic year—as arranged.)
- 341 **Reading Course in Modern European History** (3) Davison  
(Fall—day.)
- 345-46 **Reading Course in Russian History** (3-3) Thompson  
(First half: not offered 1965-66. Second half: spring—day.)

\* See footnote on page 125.

† Fourth-group courses are limited to graduate students; but they are primarily for doctoral candidates.

- 371-72 **Reading Course in American Social History (3-3)** Gray  
(Academic year—day.)
- 375-76 **Reading Course in American Political and Constitutional History (3-3)** Haskett  
(*First half:* summer 1965—offered as History 277 (3). *Second half:* fall—day.)
- 379-80 **Reading Course in Economic History \* (3-3)** Sharkey  
(Academic year—evening.)
- 381-82 **Reading Course in American Diplomatic History (3-3)** Merriman  
(*First half:* fall—day. *Second half:* 1966-67 and alternate years.)
- 395-96 **Reading Course in Modern Far Eastern History (3-3)** Gasster  
(Academic year—day.)

#### **COURSE OFFERED IN AMERICAN STUDIES INSTITUTE SUMMER 1965**

- 270 *American Democratic Thought (3)*

### **Institute for Sino-Soviet Studies**

#### **MEMBERS OF THE INSTITUTE**

K. L. London (*Director*), Franz Michael (*Associate Director*), Herbert Block, C. F. Elliott, Michael Gasster, Paul Gekker, H. C. Hinton, W. H. Kraus, Thomas Larson, L. T. Lee, Bela Maday, Lothar Metzl, G. A. Olkhovsky, Victor Petrov, Nadine Popluiko, Bernard Ramundo, R. B. Thompson, T. P. Thornton, R. K. White, Thomas Wolfe

#### **ECONOMICS**

- 133 **The Economy of the Soviet Union (3)** Gekker  
May be approved for graduate credit. (Fall—evening.)
- 267 **The Soviet Economy (3)** Gekker  
Development of the Soviet-type economy; organization, policies and problems; monetary, fiscal, production, allocative, foreign trade, economic growth. (Spring—evening.)

#### **EDUCATION**

- 281 **Seminar: the Educational System of the Soviet Union (3)**  
(Fall—evening.)
- 282 **Seminar: the Educational System of Communist China (3)**  
(Spring—evening.)

\* An interdepartmental course offered by the departments of History and Economics. Students may register in either department.



## GEOGRAPHY

- 265 **Seminar: Geography of the Soviet Union (3)** Petrov  
A detailed study of the area, including physical features, economic geography, natural and energy resources, and industries. A discussion of the latest Soviet projects, of the Soviet transportation system, of agriculture, and of multinational population trends, with emphasis on population patterns along borderlands, especially the Sino-Soviet border. (Fall—evening.)
- 266 **Seminar: Geography of China (3)** Petrov  
A study of the physical and economic geography of the country, including discussion of China's emerging industries, energy resources, transportation system. Special emphasis will be given to the population "explosion"—its distribution and significance. Emphasis also on regional geography, particularly on regions along the Sino-Soviet border, Manchuria, Tibet, Mongolia, Inner Mongolia, and Sinkiang. (Spring—evening.)

## HISTORY

- 244 **History of the Comintern (3)** Thornton  
Activities of the Communist Third International, its sponsorship of revolution and its decline and subservience to the Soviet State. (Fall—evening.)
- 245 **Seminar: Russian History (3)** Thompson  
A seminar in which students prepare research papers in some selected area of Russian history. For the fall semester 1965, the selected area from which individual topics are chosen will be the Russian Revolution. (Fall—day.)
- 295-96 **Seminar: History of the Modern Far East (3-3)** Gasster  
*First half:* social and intellectual revolution in Modern China: the replacement of the scholar-gentry by the intelligentsia of the 20th century. Emphasis placed upon the radical change that took place after 1919. *Second half:* the development of United States Far Eastern policy since 1898, with emphasis on the coming of World War II, and United States policy towards China since 1941. (*First half:* not offered 1965-66. *Second half:* spring—day.)
- 346 **Reading Course in Russian History (3)** Thompson  
A graduate course for weekly reading and discussion in Russian 19th and 20th century history. Political and intellectual movements reflecting the rise and fall of the revolutionary cycle will be emphasized. (Spring—evening.)

## POLITICAL SCIENCE

- 215-16 **Seminar: the Sino-Soviet Blocs in World Affairs I-II (3-3)** London  
*First half:* a study of the most significant issues of the Communist movement and its manifestations particularly in the Soviet Union and Red China: an examination of the concept and structure of the "world socialist system" and of intra-Bloc relations with special emphasis on the Sino-Soviet dispute. *Second half:* an examination of the political ramifications of the international Communist movement and Communist relations with the non-Communist world, with special emphasis on the nonaligned countries in Africa, Asia, and Latin America. (Academic year—evening.)
- 128 INSTITUTE FOR SINO-SOVIET STUDIES

- 224 **Readings in Socialism and Communism (3)** Kraus  
A reading course designed, on the basis of selected readings of both primary and secondary works, to introduce students to the most significant developments in pre-Marxian and Marxian socialism and Leninist communism. (Fall—evening.)
- 225 **Seminar: Theoretical Problems of Marxism-Leninism (3)** Kraus  
Crucial theoretical problems, such as the nature of revolution, the dictatorship of the proletariat, the transition to communism, imperialism, and national liberation in their development from Marx and Engels to Lenin, Khrushchev, and Mao-Tse-tung. (Spring—evening.)
- 227 **Seminar: the Politics of Eastern Europe (3)** Maday  
Comparative study of the principal political, social, and economic characteristics of the area; analysis of the events since World War II; the Soviet stake in the area; patterns of Soviet domination; efforts toward economic and political integration; the impact of the Sino-Soviet dispute; U. S. policy toward the satellite nations. (Fall—evening.)
- 230 **Seminar: Operational Techniques of International Communism (3)** Metz  
Strategy and tactics of the international Communist movement in the post-Stalin period, with emphasis on the modus operandi of Communist parties, international and national Communist front organizations, and Sino-Soviet Bloc agencies in the free world. Prerequisite: a general understanding of Communist ideology and of the workings of political movements. (Fall—evening.)
- 231 **Seminar: Sino-Soviet Relations (3)** Michael  
A discussion of the background, development, and status of the conflict within the Communist movement, with special emphasis on the role of the Chinese Communists in the dispute. (Fall—day.)
- 233 **Seminar: Soviet Government and Politics (3)**  
An analysis of the theoretical and historical bases of the Soviet political system, and the socioeconomic setting of its formation; the nature and role of the Party, government, and mass organizations; and selected problems of domestic and foreign policy. (Fall—evening.)
- 234 **Seminar: Soviet Internal Policy (3)** Block  
An examination of (1) how Soviet organization and administration and Soviet policies in social and economic, nationality and military matters have been influenced by revolutionary ideas, by traditions, and by accidental events; (2) how the leaders have applied these policies to maintain their power and to transfer man, society, and nature according to their lights. (Spring—evening.)
- 236 **Seminar: Trade Unions and Mass Activism in the Soviet System (3)**  
An examination of the theory and practice of mass participation in Soviet legislative, administrative, and judicial activities, with particular attention to current developments in the "transition to Communism." The principal case-study will be the trade-union organization as an agency for mass activism in the promotion of economic and social discipline. Other forms of mass participation, such as the Soviets, comradesly courts, and people's militia, will also be considered. (Not offered 1965-66.)



**237 Chinese Law \* (3)**

Lee

A short survey of the history of Chinese law and its social background; Western impact on Chinese law toward the end of the Manchu Dynasty; legal concepts and institutions of the Chinese Republic from 1912 until the communist take-over in 1949. The philosophy and development of the communist legal system from the Kiangsi-Yenan period to the present. (Fall—evening.)

**238 Soviet Law † (3)**

Ramundo

Concept of "socialist legality"; impact of Soviet legal system upon the individual in his relationship with the state and other participants in Soviet society; role of Communist Party in the institutional framework of the Soviet legal system; Soviet philosophy of law; state (constitutional) law including Soviet federalism, governmental apparatus, and rights and obligations of citizenship; criminal law, including economic crimes, role of social and public organizations in administration of justice, and concept of "administrative" punishment. (Spring—evening.)

**253 Seminar: Chinese Government and Politics (3)**

Michael

A discussion of the political institutions and concepts in late imperial times, during the period of the revolution, under the national government, and under the communists. The main emphasis of the seminar will be on the communist period. (Spring—evening.)

**254 Interuniversity Research Colloquium on Modern China (3)**

Michael

A colloquium of faculty members of the Institute for Sino-Soviet Studies of The George Washington University, American University, Howard University, and the University of Maryland who represent different disciplines and are concerned with applying their disciplinary work to the study of modern China. The members' research plans and studies in progress are critically discussed in weekly sessions. Advanced graduate students are admitted with the permission of the faculty group. (Fall and spring—day.)

**257 Seminar: Communism in Developing Countries (3)**

Thornton

An examination of international Communist policy for, and Communist Parties in, developing countries. Case studies will be made of selected states of Asia, Africa, and Latin America. Attention will be given to basic Communist concepts of imperialism and nationalism, and to the development and current application of Soviet and Chinese variants of strategy and tactics for "national liberation." (Spring—evening.)

**269 Seminar: Soviet Foreign Policy (3)**

Larson

The external policies and relations of the USSR; world objectives of the Soviet leaders; diplomacy in relations with other communist states, with the Western powers, and with other countries; international propaganda, disarmament policy, and foreign economic relations. (Fall—evening.)

**270 Seminar: the Soviet Foreign Policy Process (3)**

Metzl

An investigation of the functioning of instruments used to implement Soviet foreign policy as they affect specific policy objectives and international political situations. The activities of the Soviet diplomatic apparatus, its

\* Same as Law 474 (2). Graduate students registering for Political Science 237 make special arrangements with the instructor for supplementary assignments equivalent to one additional semester hour.

† Same as Law 473 (2). Graduate students registering for Political Science 238 make special arrangements with the instructor for supplementary assignments equivalent to one additional semester hour.



negotiation techniques, its *modus operandi* in the economic, cultural, and trade fields. An investigation of areas of international communism, Soviet and communist fronts, and espionage, toward a fuller understanding of the wide range of Soviet mechanisms deployed abroad to serve foreign policy objectives. (Spring—evening.)

- 288 **Seminar: Soviet Military Policy and Strategy (3)** Wolfe  
Soviet developments in the area of military policy and strategy with some attention to questions of intra-Bloc military cooperation; political context within which Soviet military policy is formulated; significant changes in recent Soviet military thought. (Fall—evening.)

- 295 **Seminar: China in the Communist Bloc (3)** Hinton  
An introduction to methods and bibliography; history of the Chinese Communist movement; ideology and political dynamics; economic and military policy; foreign policy and relations. (Spring—evening.)

- 296 **Seminar: the Communist Bloc in Far Eastern International Politics (3)** Hinton  
The Communist strategy for Asia; Stalin's Far Eastern policy; growth of local Communist movements; impact of World War II; Soviet post-war policy in Asia; victory in China; the Korean and Indochinese wars; armed struggle in South and Southeast Asia; wooing of the national bourgeoisie; development of the Asian communist states; local communist parties since World War II; Sino-Soviet rivalry. (Fall—evening.)

## PSYCHOLOGY

- 259 **Seminar: Social Psychology of Communism (3)** White  
Psychological aspects of authoritarian systems and of all-embracing political ideologies; methods and findings in the study of public opinion in the USSR and its satellites; problems of Western communications with the USSR; the nature of Communist propaganda and the appeals of Communism in non-Communist countries. (Fall—evening.)

## SLAVIC AND ORIENTAL LANGUAGES AND LITERATURES

- 161-62 **Russian Culture (3-3)** Olkhovsky  
A survey of Russian cultural heritage from the origins of ancient Russia to the present. Lecture, recitation, discussion, and individual reports on assigned topics. This course may be taken for graduate credit with the approval of the instructor. (Academic year—evening.)
- 165 **Soviet Literature (3)** Popluiko  
A survey of major literary figures, literary movements, and literary styles. Revolution and its impact on writers. The theme of the Civil War in literature. The place of the Soviet intelligentsia in Soviet society, revival of the psychological novel, social realism, and government control of literature. This course may be taken for graduate credit with the approval of the instructor. (Fall—evening.)

## COURSES OFFERED IN SPECIAL PROGRAM ON COMMUNIST AFFAIRS—SUMMER 1965

- Political Science 160, *Theory and Practice of Communism (3)*  
Political Science 161, *Soviet Government and Politics (3)*  
Political Science 162, *Communist Chinese Government and Politics (3)*

## International Affairs

- Professors* J. W. Brewer, H. M. Merriman, R. D. Campbell, R. H. Davison, W. H. Kraus, W. C. Davis, R. B. Thompson, Wilson Schmidt, C. E. Galbreath, W. L. Tayler, K. L. London, J. L. B. Atkinson, H. M. Stout (*Chairman*), J. N. Mosél, W. C. Hopkins, Franz Michael, R. E. Purcell, Joseph Aschheim, J. A. Brown, Jr., R. K. White, Herman Walker, Jr., Benjamin Nimer
- Professorial Lecturers* R. L. Garthoff, Lothar Metzl, V. P. Petrov, T. W. Wolfe, Herbert Block, Thomas Larson, B. C. Maday
- Associate Professors* J. T. Davis, H. R. Ludden, \*R. S. Jordan, \*George Stambuk, H. C. Hinton, P. F. Gallagher, Michael Gasster
- Associate Professorial Lecturers* Warren Eitler, T. P. Thornton, Paul Gekker, Bernard Ramundo
- Assistant Professors* P. P. Hill, J. K. McDonald, Willard Overgaard, G. A. Olkhovsky, Nadine Popluiko, Bernard Reich, C. F. Elliott
- Assistant Professorial Lecturer* L. T. Lee

The International Affairs programs are interdisciplinary in concept and interdepartmental in structure. Programs being developed are: Comparative Institutions and Cultures, Political and Economic Development, International Politics, Law and Organization, National Security, Sino-Soviet Studies. The courses listed below are an indication of the range of elective courses available. For course descriptions see the departmental announcements concerned.

### GENERAL

- Anthropology 161 *Language and Culture* (3)  
 Anthropology 263 *Culture Contact and Change* (3)  
 Economics 181-82 *International Economics* (3-3)  
 Economics 246 *Foreign Labor Movements* (3)  
 Economics 251-52 *Economic Development* (3-3)  
 Economics 281-82 *International Economics* (3-3)  
 Economics 284 *United States Foreign Economic Policy* (3)  
 Economics 290 *Seminar: International Economics* (3)  
 Geography 52 *World Regions* (3)  
 Geography 126 *World Economies* (3)  
 Geography 127 *World Population and Settlement* (3)  
 Geography 145 *Psychological Geography* (3)  
 Geography 146 *World Political Geography* (3)  
 Geography 241-42 *Seminar: Place and Culture* (3-3)  
 Geography 253-54 *Seminar: Problems of Developing Nations* (3-3)  
 History 181-82 *Diplomatic History of the United States* (3-3)  
 History 183 *Oversea Expansion of the United States* (3)  
 History 184 *Canada and the United States* (3)  
 History 281-82 *Seminar: Diplomatic History of the United States* (3-3)

\* On leave of absence 1965-66.

History 381-82 *Reading Course in American Diplomatic History* (3-3)

International Affairs 260 *Fundamentals of National Power* \* (3)

International Affairs 261 *International and United States Foreign Policy* \* (3)

International Affairs 262 *National Security Policy of the United States* \* (3)

International Affairs 297 *Readings in International Affairs* \* (1 to 2)

International Affairs 299-300 *Thesis* \* (3-3)

Political Science 111 *Introduction to Comparative Government and Politics* (3)

Political Science 112 *Introduction to Comparative Government and Politics* † (3)

Political Science 117-18 *Political Theory: the Nature and Growth of Political Thought in the West* (3-3)

Political Science 171 *International Politics* (3)

Political Science 172 *Organization and Function of the United Nations* (3)

Political Science 181-82 *Survey of Public International Law and Organization* (3-3)

Political Science 187-88 *Current Problems in International Politics* (1-1)

Political Science 197 *Proseminar: International Affairs—Strategies of Contemporary American Foreign Policy* (3)

Political Science 211 *Readings in Comparative Government and Politics* (3)

Political Science 212 *Seminar: Comparative Government and Politics* (3)

Political Science 217 *Seminar: Topics in Political Theory* (3)

Political Science 218 *Reading Course in Political Theory* (3)

Political Science 271-72 *Problems in International Organization* (3-3)

Political Science 273 *Public Opinion and Foreign Policy* (3)

Political Science 275-76 *Problems in International Politics* (3-3)

Political Science 281-82 *Seminar: Public International Law* (3-3)

Political Science 283 *Topics in International Law* \* (3)

Political Science 285 *Diplomacy Since World War II* \* (3)

Psychology 156 *Psychology of Propaganda and Public Opinion* (3)

Psychology 262 *Behavioral Factors in Social Change* (3)

Sociology 144 *Mass Communications* (3)

Sociology 226 *Problems of Underdeveloped Areas* (3)

Sociology 241 *Population Problems* (3)

## AFRICA

Geography 155 *Africa* (3)

Political Science 192 *Governments and Politics of North Africa* (3)

\* Offered in War College programs only.

† This course may be required of students inadequately prepared for graduate work in the Institute for Sino-Soviet Studies.



## FAR EAST

- Geography 165 *Eastern and Southeastern Asia* \* (3)  
History 187 *History of Modern China* \* (3)  
History 189 *History of India* \* (3)  
History 190 *Modern India* \* (3)  
History 195-96 *History of East Asia* \* (3-3)  
Political Science 101 *The Far East in the Modern World* \* (3)  
Political Science 194 *Governments of China and Japan* \* (3)  
Political Science 254 *Interuniversity Research Colloquium on Modern China* (3)  
Political Science 293 *Seminar: Governments and Politics of South and Southeast Asia* (3)

## LATIN AMERICA

- Economics 185-86 *Economic History and Problems of Latin America* (3-3)  
Economics 285-86 *Economic Development of Latin America* (3-3)  
Geography 161 *Latin America* (3)  
History 163 *Colonial Latin America* (3)  
History 164 *South America since Independence* (3)  
History 166 *Mexico and the Caribbean since Independence* (3)  
History 261-62 *Seminar: Latin American History* (3-3)  
History 266 *Reading Seminar: Contemporary Latin America* (3)  
Political Science 177 *Recent Trends in Latin American Politics and Government* (3)  
Political Science 178 *International Politics in the Western Hemisphere* (3)  
Political Science 277 *Seminar: Latin American Government* (3)  
Political Science 278 *Seminar: Latin American Political Philosophy* (3)

## MIDDLE EAST

- Geography 156 *The Middle East* (3)  
History 193 *History of the Near East* (3)  
History 293 *Seminar: History of the Modern Near East* (3)  
Political Science 191 *Governments and Politics of the Middle East* (3)  
Political Science 292 *Governments and Politics of North Africa* (3)

## SINO-SOVIET

- Economics 133 *The Economy of the Soviet Union* \* (3)  
Economics 267 *The Soviet Economy* (3)  
Education 281 *Seminar: the Educational System of the Soviet Union* (3)  
Education 282 *Seminar: the Educational System of Communist China* (3)  
Geography 164 *Communist China* \* (3)  
Geography 166 *The Soviet Union* \* (3)  
Geography 265 *Seminar: Geography of the Soviet Union* (3)  
Geography 266 *Seminar: Geography of China* (3)

\* This course may be required of students inadequately prepared for graduate work in the Institute for Sino-Soviet Studies.

- History 137 *History of Soviet Foreign Policy* \* (3)  
 History 145-46 *History of Russia* \* (3-3)  
 History 187 *History of Modern China* \* (3)  
 History 195-96 *History of East Asia* \* (3-3)  
 History 244 *Seminar: History of the Comintern* (3)  
 History 245 *Seminar: Russian History* (3)  
 History 295-96 *Seminar: History of the Modern Far East* (3-3)  
 History 346 *Reading Course in Russian History* (3)  
 Political Science 101 *The Far East in the Modern World* \* (3)  
 Political Science 107 *Problems in Modern Political Thought* \* (3)  
 Political Science 112 *Introduction to Comparative Government and Politics* \* (3)  
 Political Science 193 *Governments and Politics of South and Southeast Asia* \* (3)  
 Political Science 194 *Governments of China and Japan* \* (3)  
 Political Science 215-16 *Seminar: the Sino-Soviet Blocs in World Affairs I-II* (3-3)  
 Political Science 224 *Readings in Socialism and Communism* (3)  
 Political Science 225 *Seminar: Theoretical Problems of Marxism-Leninism* (3)  
 Political Science 227 *Seminar: the Politics of Eastern Europe* (3)  
 Political Science 230 *Seminar: Operational Techniques of International Communism* (3)  
 Political Science 231 *Seminar: Sino-Soviet Relations* (3)  
 Political Science 233 *Seminar: Soviet Government and Politics* (3)  
 Political Science 234 *Seminar: Soviet Internal Policy* (3)  
 Political Science 236 *Seminar: Trade Unions and Mass Activism in the Soviet System* (3)  
 Political Science 237 *Chinese Law* † (3)  
 Political Science 238 *Soviet Law* ‡ (3)  
 Political Science 253 *Seminar: Chinese Government and Politics* (3)  
 Political Science 257 *Seminar: Communism in Developing Countries* (3)  
 Political Science 269 *Seminar: Soviet Foreign Policy* (3)  
 Political Science 270 *Seminar: the Soviet Foreign Policy Process* (3)  
 Political Science 288 *Seminar: Soviet Military Policy and Strategy* (3)  
 Political Science 295 *Seminar: China in the Communist Bloc* (3)  
 Political Science 296 *Seminar: the Communist Bloc in Far Eastern International Politics* (3)  
 Psychology 151 *Social Psychology* \* (3)  
 Psychology 259 *Seminar: Social Psychology of Communism* (3)  
 Slavic and Oriental Languages and Literatures 161-62 *Russian Culture* \* (3-3)  
 Slavic and Oriental Languages and Literatures 165 *Soviet Literature* \* (3)

\* This course may be required of students inadequately prepared for graduate work in the Institute for Sino-Soviet Studies.

† Same as Law 474 (2). Graduate students registering for Political Science 237 make special arrangements with the instructor for supplementary assignments equivalent to one additional semester hour.

‡ Same as Law 473 (2). Graduate students registering for Political Science 238 make special arrangements with the instructor for supplementary assignments equivalent to one additional semester hour.

## WESTERN EUROPE

- Geography 153 *Western Europe* (3)  
Geography 154 *The Mediterranean* (3)  
History 141-42 *History of France* (3-3)  
History 149-50 *European Diplomatic History* (3-3)  
History 241-42 *Seminar: Modern European History* (3-3)  
History 249 *Seminar: European Diplomatic History* (3)  
Political Science 113 *Political Problems of the British Commonwealth of Nations* (3)

## Italian

See "Romance Languages and Literatures."

## Journalism

- Associate Professor R. C. Willson (Acting Chairman)*  
*Associate Professorial Lecturers H. L. Coppenbarger, J. E. Eisen, Daniel Gottlieb*  
*Assistant Professorial Lecturers F. L. Dennis, T. R. Smith, B. R. Berg, Howard Paine*

### FIRST GROUP

- 71-72 **Journalism in American Society** (3-3) Willson  
Evolution of newspapers and other media in relation to political, social, and economic life; the concept of press freedom; problems of contemporary journalism—with special emphasis on press-government relations. (Academic year—day and evening.)

### SECOND GROUP

- 111 **Reporting** (3) Coppenbarger  
Instruction and classroom practice in gathering, evaluating, and writing news; emphasis on newspapers, other media considered. (Fall—day; spring—evening.)
- 115 **Editing and Make-up** (3) Coppenbarger  
Editing of news and other material for publication, typography and display; use of pictures and other graphic presentations. (Not offered 1965-66.)
- 116 **Editing Magazines and Specialized Publications** (3) Paine  
Layout, typography, and design for magazines, newsletters, house organs, and similar publications for associations, institutions, and industry. (Spring—evening.)
- 121 **Feature Writing** (3) Willson  
Instruction and practice in writing magazine articles, material for which is obtained through independent investigation. (Fall—evening.)

### 136 JOURNALISM



- 133 **Advanced Reporting: Community News (3)** Eisen  
Instruction and practice in coverage and writing of local news. (Spring—day.)
- 137 **Advanced Reporting: National Affairs (3)** Gottlieb  
Instruction and practice in coverage and writing of federal government news from the point of view of the press association. (Fall—evening.)
- 139 **Advanced Reporting: Radio and Television News (3)**  
Instruction and practice in preparing news and public affairs programs for the broadcast media. (Not offered 1965-66.)
- 140 **Photojournalism (3)** Smith  
Photographic techniques affecting publication, the illustration and the story angle, standards of judgment in selection and use of pictures, captions, editing technique, cropping for effective reproduction. (Spring—evening.)
- 145 **Principles and Problems of Public Relations (3)** Berg  
Principles, problems, and ethics of public relations for government agencies, commercial establishments, educational and other public institutions. Case histories of successful programs. (Fall—evening.)
- 146 **Government Information (3)**  
The growth of information activities in government and the role of the information specialist. Instruction and practice in writing and editing for government information operations. (Not offered 1965-66.)
- 151 **Editorial Writing (3)**  
Instruction and practice in writing of editorials on public affairs. (Not offered 1965-66.)
- 196 **Seminar (3)** Willson  
For journalism majors only. Research in areas relating journalism to secondary fields of study. (Spring—as arranged.)
- 198 **Law of the Press (3)** Dennis  
Freedom of the press, censorship, legislative controls, publications as contempt of court, copyright, news gathering agencies, labor law and the newspaper business, law of libel, privileged matter, fair comment on public characters, right of privacy. (Fall—evening.)

## **Latin**

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See "Classical Languages and Literatures."

## **Linguistics—Graduate Study**

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### COMMITTEE ON LINGUISTIC STUDY

J. G. Allee, Jr. (*Chairman*), W. G. Clubb, Frances Henry, J. C. King, G. E. McSpadden, N. D. Nelson, D. E. Walker, Jr.

The following courses in the area of Linguistics are offered by the departments of Columbian College of Arts and Sciences.

## ANTHROPOLOGY

- |     |  |           |
|-----|--|-----------|
| 161 | <i>Language and Culture</i> (3)            |           |
| 162 | <i>Linguistics in Anthropology</i> (3)     | Gallagher |
| 193 | <i>Anthropological Methods</i> (3)         | Walker    |
| 271 | <i>Linguistics and Culture History</i> (3) | Walker    |
|     |  | The Staff |

## ENGLISH

- |        |  |       |
|--------|--|-------|
| 125    | <i>Introduction to English Linguistics</i> (3) | Allee |
| 223-24 | <i>Old English</i> (3-3)                       | Allee |

## GERMANIC LANGUAGES AND LITERATURES

- |        |   |             |
|--------|---|-------------|
| 201-2  | <i>Middle High German</i> (3-3)                                 |             |
| 205-6  | <i>Gothic</i> (3-3)   | Legner      |
| 209-10 | <i>Old High German</i> (3-3)                                    | Legner      |
| 213-14 | <i>Old Norse</i> (3-3)  | King        |
| 223-24 | <i>Linguistic Analysis of Modern German</i> (3-3)               | Allee       |
| 225-26 | <i>Seminar: Linguistics</i> (3-3)                               | King        |
| 227-28 | <i>Sanskrit—Introduction to Indo-European Linguistics</i> (3-3) | King, Allee |
|        |   | King        |

## MATHEMATICS

- |       |   |           |
|-------|---|-----------|
| 101   | <i>Introduction to Mathematical Logic</i> (3) | Nelson    |
| 122   | <i>Introduction to Abstract Algebra</i> (3)   | The Staff |
| 124   | <i>Introduction to Matrix Theory</i> (3)      | The Staff |
| 201-2 | <i>Mathematical Logic</i> (3-3)               | Nelson    |

## PHILOSOPHY

- |     |                                   |          |
|-----|-----------------------------------|----------|
| 196 | <i>Philosophy of Language</i> (3) | Schlagel |
|-----|-----------------------------------|----------|

## PSYCHOLOGY

- |     |   |       |
|-----|---|-------|
| 115 | <i>Psychology of Language and Communication</i> (3) | Mosél |
|-----|---|-------|

## ROMANCE LANGUAGES AND LITERATURES

### FRENCH

- |        |   |          |
|--------|---|----------|
| 103    | <i>Problems of Pronunciation and Intonation</i> (3) | Vigneras |
| 212    | <i>Historical French Grammar</i> (3)                | Vigneras |
| 213-14 | <i>Old French</i> (3-3)                             | Vigneras |

### SPANISH

- |     |   |           |
|-----|---|-----------|
| 103 | <i>Problems of Pronunciation and Intonation</i> (3) | McSpadden |
| 212 | <i>Historical Spanish Grammar</i> (3)               | McSpadden |
| 214 | <i>Old Spanish</i> (3)                              | McSpadden |

### GENERAL COURSES IN ROMANCE LANGUAGES AND LITERATURES

- |     |  |           |
|-----|--|-----------|
| 270 | <i>Experimental Phonetics</i> (3)                            | McSpadden |
| 279 | <i>Introduction to Romance Philology and Linguistics</i> (3) | McSpadden |

## 138 LINGUISTICS—GRADUATE STUDY

## SLAVIC AND ORIENTAL LANGUAGES AND LITERATURES

### SLAVIC

- 125 *Chinese Linguistic Structure* (3) Fincher

### CHINESE (MANDARIN)

- 125 *Russian Linguistic Structure* (3) Child  
126 *Comparative Russian-English Linguistic Structure* (3) Child

### SPEECH AND DRAMA

- 279 *Anatomy and Physiology of Speech and Hearing* (3) Henry  
280 *Neurophysiology of Communication* (3) Henry  
284 *Dynamic Phonetics* (3) Henry

### STATISTICS

- 261-62 *Information Theory for Engineers* (3-3) Kullback  
271-72 *Statistical Information Theory* (3-3) Kullback

## Mathematics

*Professors* Florence Mears, N. D. Nelson (*Chairman*), T. P. G. Liverman, N. A. Wiegmann

*Professorial Lecturers* W. H. Marlow, D. M. Dribin, Thomas Saaty, Joseph Blum

*Associate Professors* W. A. Smith, Hewitt Kenyon, Ludvik Janos (*Visiting*), L. M. Court (*Visiting*), Geza Schay

*Associate Professorial Lecturer* J. A. Simmons

*Assistant Professors* Paul Sadagursky, Vaclav Pfeffer

*Assistant Professorial Lecturers* Mabel Morris, A. J. Ziffer, C. H. Koerner

### FIRST GROUP\*

- 3 **College Algebra** (3) The Staff  
Exponents and logarithms; linear equations; complex numbers; quadratic equations; introduction to theory of equations; mathematical induction and the binomial theorem; permutations, combinations, and probability; determinants; progressions. Prerequisite: one year each of high school algebra and high school geometry. (Fall and spring—day and evening; summer 1965.)
- 6 **Plane Trigonometry** (3) The Staff  
Prerequisite: two years of high school algebra and one year of high school geometry, or Mathematics 3 (or concurrent registration therefor). (Fall and spring—day and evening; summer 1965.)

\* New students registering for Mathematics 3, 6, 9, 15, 21, or 27 are required to take a placement examination.



**9 General Mathematics I (3)**

The Staff

For those students in the School of Education or others electing Mathematics 9 and 10 as a terminal sequence in mathematics. Propositional logic and truth values; the number system, number bases, arithmetical computation; algebraic functions; topics from plane geometry. Prerequisite: two years of high school mathematics. Not open to students who have had former Mathematics 2. (Fall and spring—day and evening; summer 1965.)

**10 General Mathematics II (3)**

The Staff

An introduction to matrices and vector spaces; non-Euclidean geometry; introduction to concepts of the calculus. Prerequisite: Mathematics 9 or former 2. (Fall—evening; spring—day and evening; summer 1965.)

**15 Finite Mathematics I (3)**

The Staff

Truth value connectives and switching circuits, partitions and counting, probability theory. Prerequisite: two years of high school mathematics. (Fall—day and evening; spring—evening; summer 1965.)

**16 Finite Mathematics II (3)**

The Staff

Vectors and matrices, mathematics of finance and accounting, linear programming, introduction to game theory. Prerequisite: Mathematics 15. (Spring—day and evening; summer 1965.)

**21 Calculus I (3)**

The Staff

Elementary concepts of analytic geometry. Differentiation and integration of algebraic functions with applications. Prerequisite: Mathematics 3 and 6; or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry; or the equivalent. (Fall and spring—day and evening; summer 1965.)

**22 Calculus II (3)**

The Staff

Differentiation and integration of transcendental functions and applications, topics in analytic geometry, techniques of integration. Prerequisite: Mathematics 21. (Fall and spring—day and evening; summer 1965.)

**23 Calculus III (3)**

The Staff

Vector concepts, improper integrals, polar coordinates, and infinite series. Prerequisite: Mathematics 22. (Fall and spring—day and evening; summer 1965.)

**24 Calculus IV (3)**

The Staff

Multiple integration and partial differentiation with applications, vectors and solid geometry, differential equations. Prerequisite: Mathematics 23. (Fall and spring—day and evening; summer 1965.)

**27 Calculus I and II (6)**

The Staff

The equivalent of Mathematics 21 and 22. (Fall—day.)

**28 Calculus III and IV (6)**

The Staff

The equivalent of Mathematics 23 and 24. (Spring—day.)

**SECOND GROUP\***

**101 Introduction to Mathematical Logic (3)**

Nelson

Development of propositional and predicate calculi, basic semantic concepts,

\* Mathematics 24 or former 31 is prerequisite to all second-group courses. Exception to this regulation may be made for Mathematics 101, 122, and 124. Students anticipating a substantial concentration in mathematics should consult with the Department about early completion of these courses.

elementary intuitive set theory, Boolean algebra. Prerequisite: Mathematics 24 or former 31, or Philosophy 121. (Fall—evening.)

- 102 **Fundamental Concepts of Mathematics (3)** Nelson  
Axiomatic set theory, cardinal and ordinal arithmetic, foundations of the real number system. Prerequisite: Mathematics 101 or permission of the instructor. (Spring—evening.)
- 106 **Introduction to Topology (3)** Kenyon  
Prerequisite: Mathematics 122 or permission of the instructor. (Spring—evening.)
- 111 **Mathematics for Engineers and Physicists I (3)** The Staff  
Differential equations, linear algebra. (Fall and spring—day and evening; summer 1965.)
- 112 **Mathematics for Engineers and Physicists II (3)** The Staff  
Fourier series, Laplace transformation, partial differential equations. Prerequisite: Mathematics 111 or former 132. (Fall and spring—day and evening; summer 1965.)
- 120 **Introduction to Theory of Numbers (3)** The Staff  
(Fall—evening.)
- 122 **Introduction to Abstract Algebra (3)** The Staff  
(Fall—evening; spring—day; summer 1965.)
- 124 **Introduction to Matrix Theory (3)** The Staff  
Elementary theory of finite vector spaces, determinants, equivalence, matrices with polynomial elements, similarity of matrices. (Fall—day; spring—evening; summer 1965.)
- 127 **Foundations of Geometry (3)** Nelson  
Alternative postulational developments of Euclidean geometry. Non-Euclidean geometries. (1966–67 and alternate years.)
- 134 **Introduction to Boundary Value Problems (3)** The Staff  
Prerequisite: Mathematics 111 or former 132, or 142. (Spring—day.)
- 135 **Projective Geometry (3)** The Staff  
(Fall—evening.)
- 139 **Advanced Calculus I (3)** The Staff  
Limits, continuity, real number system, mean value theorems, partial differentiation, implicit function theorems, transformations, and mappings. (Fall—evening; spring—day; summer 1965.)
- 140 **Advanced Calculus II (3)** The Staff  
Vector fields, multiple integrals, line and surface integrals, point set theory, theory of integration, improper integrals. Prerequisite: Mathematics 139. (Spring—evening; summer 1965.)
- 141 **Introduction to Infinite Series (3)** Mears  
(1966–67 and alternate years.)
- 142 **Theory of Differential Equations (3)** The Staff  
Prerequisite: Mathematics 139. (Fall—day; summer 1965.)
- 153 **Introduction to Numerical Analysis (3)** Marlow  
(Fall—evening.)

- 157 **Introduction to Complex Variable Theory** (3) The Staff  
(Fall—evening.)
- THIRD GROUP**
- 201-2 **Mathematical Logic** (3-3) Nelson  
(Academic year—evening.)
- 220 **Theory of Numbers** (3)  
(Not offered 1965-66.)
- 237-38 **Theory of Functions of a Complex Variable** (3-3) The Staff  
A year course: credit is not given for the first half until the second half is completed. (Academic year—evening.)
- 242 **Infinite Series** (3) Mears  
(1966-67 and alternate years.)
- 243-44 **Numerical Analysis** (3-3) Marlow  
(Academic year—evening.)
- 249 **Ordinary Differential Equations** (3) The Staff  
(1966-67 and alternate years.)
- 251-52 **Theory of Functions of a Real Variable** (3-3) The Staff  
(1966-67 and alternate years.)
- 253-54 **Topics in Nonlinear Mathematics** (3-3) Saaty  
(Not offered 1965-66.)
- 255 **Differential Geometry** (3) Schay  
(Fall—evening.)
- 256 **Introduction to Algebraic Geometry** (3) Dribin  
(Not offered 1965-66.)
- 257 **Lie Groups** (3) Schay  
(Fall—evening.)
- 258 **Group Representations** (3) Janos  
(Spring—evening.)
- 261 **Generalized Functions and Operational Methods** (3) Liverman  
Theory of generalized functions in one variable. Operational calculus of generalized functions. Applications to differential equations and Fourier analysis. Prerequisite: Mathematics 140. (Fall—evening.)
- 262 **Advanced Operational Methods** (3) Liverman  
Generalized functions on test spaces of analytic functions. Operational calculus in several variables. Applications to partial differential and convolution equations of applied mathematics. Prerequisite: Mathematics 261. (Spring—evening.)
- 265-66 **Modern Algebra** (3-3) Wiegmann  
Fundamental concepts of theory of groups, rings, and fields. Theory of finite fields, extension fields, Galois groups, factorization theory in Gaussian domains, and groups with operators. (Academic year—evening.)



- 267 **Topics in Matrix Theory (3)** Wiegmann  
 Theory of linear transformations (vector spaces over a division ring), advanced classical theory, matrix representation of groups and rings, special topics as time allows. Prerequisite: Mathematics 124 and an elementary knowledge of groups, rings, and fields. (Spring—evening.)
- 268 **Calculus of Variations (3)** Janos  
 (1966-67 and alternate years.)
- 270 **Tensor Analysis (3)** Schay  
 (Summer 1965.)
- 272 **Hilbert Space (3)**  
 (1966-67 and alternate years.)
- 277 **Partial Differential Equations (3)** Schay  
 (1966-67 and alternate years.)
- 281-82 **General Topology (3-3)** Kenyon  
 (1966-67 and alternate years.)
- 287-88 **Functional Analysis (3-3)** Saaty  
 (Academic year—Saturday morning.)
- 291-92 **Seminar: Topology (3-3)** Kenyon  
 (Academic year—as arranged.)
- 295-96 **Reading and Research (3-3)** The Staff  
 (Academic year—as arranged.)
- 299-300 **Thesis (3-3)** The Staff  
 (Academic year—as arranged; summer 1965.)

#### COURSE OFFERED IN SPECIAL PROGRAM—SUMMER 1965

- 113 *Graph Theory (3)*

### Microbiology

*Professors* A. M. Griffin, Mary Louise Robbins, R. C. Parlett (*Chairman*)

*Associate Professors* Rudolph Hugh, Lewis Affronti

*Assistant Professors* Elizabeth O'Hern, Melvin Reich

- 211 **Microbiology (4)** The Staff  
 A lecture and laboratory course. Graduate course on the study of bacteria, fungi, rickettsiae, and viruses. Prerequisite: any biological laboratory science, Chemistry 151-52 (prerequisite for Medical Technology students: Chemistry 21, 22). Laboratory fee, \$16. (Fall—day.)
- 212 **Pathogenic Microbiology (4)** The Staff  
 A lecture and laboratory course. Continuation of 211 with emphasis upon the harmful activities of microorganisms. Prerequisite: Microbiology 211 or the equivalent. Laboratory fee, \$16. (Spring—day.)

- 217 **Advanced Mycology (4)** O'Hern  
Lecture (2 hours), laboratory (4 hours). Advanced study of the fungi. Lecture and laboratory exercises. Prerequisite: Microbiology 211 or the equivalent. Laboratory fee, \$16. (1965-66 and alternate years: fall—as arranged.)
- 225 **Microbial Chemistry and Physiology (3)** Affronti  
A lecture course. The biochemical features peculiar to various microorganisms—especially bacteria—are described and are compared with those of the animal cell. Includes discussion of the use of microorganisms in the elucidation of problems in biochemistry. Prerequisite: Biochemistry 221-22 or the equivalent. Microbiology 211 or the equivalent is recommended. (1965-66 and alternate years: fall—as arranged.)
- 227 **Microbial Pharmacology (2)** Affronti  
A lecture course describing the interactions of drugs and microorganisms—action of drugs on microbes, resistance of microbes to drugs, metabolism of drugs by microbes. Includes discussion of the selective action of drugs toward microbial and animal cells. Prerequisite: Microbiology 225 or permission of the instructor. (1966-67 and alternate years: fall—as arranged.)
- 230 **Statistics and Microbiology (2)** Griffin  
The application of statistical methods to the problems of microbiology. For graduate students. Prerequisite: elementary college algebra. (Spring—as arranged.)
- 231 **Immunology and Immunochemistry (4)** Parlett  
Preparation and testing of serological materials. Demonstration of basic serological phenomena. Prerequisite: Microbiology 211. Laboratory fee, \$16. (1966-67 and alternate years: fall—as arranged.)
- 233 **Virology (4)** Robbins  
Study of viruses and rickettsiae. Lectures and laboratory exercises. For graduate students. Prerequisite: Microbiology 211. Laboratory fee, \$16. (1965-66 and alternate years: fall—as arranged.)
- 235 **Systematic Bacteriology (3)** Hugh  
The history of bacterial classification. International rules of nomenclature as applied to bacteria, development of bacterial classification based upon relationships. Survey of characteristics of bacterial groups. Prerequisite: Microbiology 212 or the equivalent. (1965-66 and alternate years: fall—as arranged.)
- 249-50 **Introduction to Medical Research \* (3-3)** The Staff  
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, \$7.50 a semester. (Academic year—W 1-5 pm.)
- 251 **Diagnostic Bacteriology (2)** Hugh  
Lecture (1 hour), laboratory or field (2 hours). Primarily an elective course for medical students; open to qualified graduate students. Lectures on clinical situations involving bacteriology. Laboratory is mainly demonstration but includes student participation. (Fall—S 9-12 am.)

\* An interdepartmental course. The student should register in the department directing his research.

- 253 **Diagnostic Mycology (2)** O'Hern  
Lecture (1 hour); demonstrations, discussions, or field (2 hours). Primarily an elective course for medical students; open to qualified graduate students. Lectures applicable to clinical problems, class discussion, student presentation of literature in the field, individual or group projects with oral progress reports, field trips to other laboratories. Considerable use of teaching aids. (Fall—S 9–12 am.)
- 255 **Diagnostic Virology (2)** Robbins  
Lecture (1 hour), laboratory (2 hours). Primarily an elective course for medical students; open to qualified graduate students. Parallel to Microbiology 251, with substitution of viruses for bacteria. (Fall—Th 1–4 pm.)
- 257 **Diagnostic Immunology (2)** Parlett, Affronti  
Lecture (1 hour), laboratory (2 hours). Primarily an elective course for medical students; open to qualified graduate students. Lectures supplementing Microbiology 211 and 212, with emphasis on practical immunology frequently encountered in medical situations. Laboratory is primarily demonstration, using teaching aids. Periodic student discussion. (Fall—Th 1–4 pm.)
- 293–94 **Staff Seminar (1–1)** The Staff  
For graduate students. Bi-weekly throughout the year. (Academic year—as arranged.)
- 295–96 **Research in Microbiology (arr.)** The Staff  
(Academic year—as arranged.)
- 299–300 **Thesis (3–3)** The Staff

## Music

*Associate Professor George Steiner (Chairman)*

*Assistant Professor Robert Parris*

*Assistant Professorial Lecturers John Haskins, William Montgomery*

*Studio Lecturers in Applied Music N. O. Scribner, Jr., John Stephens, Margaret Tolson, Jule Zabawa, Ervin Klinkon, Mark Thomas, Marian McNabb, Constance McKay, Cecelia Porter, John Mack, Sidney Forrest, Peggy Reinburg*

### MUSIC HISTORY AND LITERATURE

#### FIRST GROUP

- 3 **Music Appreciation (3)** Steiner, Haskins, Parris  
An introduction to the historical sequences of musical style, the elements of music, and the media of musical presentation. (Fall and spring—day and evening; summer 1965.)
- 4 **Survey of Music Literature and Forms (3)** Steiner, Haskins  
General study of musical forms, structures, and textures as well as the works of the principal composers. (Spring—day and evening; summer 1965.)



## SECOND GROUP

- 103-4 **History of Music (3-3)** Steiner  
The development of music in the Western World from the early Christian Era to the present. (Academic year—day; summer 1965.)
- 105 **Music of the Baroque Period (3)** Parris  
Study of the musical styles, techniques, and literature from 1600 to 1750. (Not offered 1965-66.)
- 106 **Music of the Classic Period (3)** Parris  
Study of styles, techniques, and literature from the 18th century schools through Haydn, Mozart, and Beethoven. (Not offered 1965-66.)
- 107 **Music of the Romantic Period (3)** Haskins  
Study of the musical styles, backgrounds, and literature from Schubert through the 19th century. (Fall—day.)
- 108 **Music of the 20th Century (3)** Steiner  
The principal schools, techniques, developments, and trends of the 20th century. (Spring—day.)
- 109 **Orchestra Literature (3)** Steiner  
Survey of the history and styles of orchestra literature; analysis of representative works. (Not offered 1965-66.)
- 110 **Chamber Music Literature (3)** Steiner  
Survey of the history and styles of chamber music literature; analysis of representative works. (Not offered 1965-66.)
- 121 **The Opera (3)** Haskins  
Survey of the history and styles of opera; analysis of representative works. (Spring—day.)
- 125 **Keyboard Music Literature (3)** Parris  
Survey of the history, style, and major content of the keyboard literature from the 16th century to the present. (Fall—day.)

## MUSIC THEORY

### FIRST GROUP

- 1 **Elements of Music (3)** Porter  
Notation, scales, keys, intervals, terms, rhythms, ear-training. (Fall and spring—day.)
- 5-6 **Music Theory (3-3)** Parris  
A year course: credit is not given for the first half until the second half is completed. Lecture (3 hours), laboratory (1 hour). Ear-training, sight-singing, melodic and harmonic diction; elementary harmony—triads, inversions, part writing, modulations, figured bass. (Academic year—day.)

### SECOND GROUP

- 131-32 **Advanced Music Theory (3-3)** Parris  
A year course: credit is not given for the first half until the second half is completed. Practice in harmonic writing, figured and unfigured bass, secondary and altered chords, nonharmonic tones and extended modulations. Prerequisite: Music 5-6 or the equivalent. (Academic year—day.)

- 135 **Counterpoint (3)** Parris  
The study and practice of early contrapuntal techniques. (Spring—day.)
- 137 **Orchestration (3)** Parris  
Instrumental scoring. (Not offered 1965–66.)
- 138 **Form and Analysis (3)** Parris  
Analysis of musical forms in representative musical literature. (Fall—day.)
- 151 **Conducting (3)** Steiner  
Technique of conducting, score reading, rehearsal procedures, analysis, and interpretation of selected musical literature; practice in conducting. (Fall—day.)

### APPLIED MUSIC

All Applied Music courses may be repeated for credit. The supplementary fee is waived for full-time music majors.

#### FIRST GROUP

- 11 **Piano (1)** Tolson, McNabb, McKay, Porter  
Individual lesson (½ hour), required practice (3 hours). Supplementary fee, \$40. (Fall and spring—as arranged; summer 1965.)
- 12 **Piano (2)** Tolson, McNabb, McKay, Porter  
Individual lesson (1 hour), required practice (6 hours). Supplementary fee, \$80. (Fall and spring—as arranged.)
- 13 **Voice (1)** Zabawa  
Individual lesson (½ hour), required practice (3 hours). Supplementary fee, \$40. (Fall and spring—as arranged; summer 1965.)
- 14 **Voice (2)** Zabawa  
Individual lesson (1 hour), required practice (6 hours). Supplementary fee, \$80. (Fall and spring—as arranged.)
- 15 **Organ (1)** Scribner, Reinburg  
Individual lesson (½ hour), required practice (3 hours). Supplementary fee, \$40. (Fall and spring—as arranged; summer 1965.)
- 16 **Organ (2)** Scribner, Reinburg  
Individual lesson (1 hour), required practice (6 hours). Supplementary fee, \$80. (Fall and spring—as arranged.)
- 17 **Orchestral Instrument (1)** The Staff  
Individual lesson (½ hour), required practice (3 hours). Supplementary fee, \$40. (Fall and spring—as arranged; summer 1965.)
- 18 **Orchestral Instrument (2)** The Staff  
Individual lesson (1 hour), required practice (6 hours). Supplementary fee, \$80. (Fall and spring—as arranged.)
- 51 **Orchestra (1)** Steiner  
Preparation and performance of orchestral literature. Prerequisite: audition before Director. (Fall and spring—evening.)

**53 Chorus (1)**

**Zabawa**

Preparation and performance of choral literature. Prerequisite: audition before Director. (Fall and spring—evening.)

**SECOND GROUP**

Before admission to second-group courses in Applied Music, the student must demonstrate, in audition, that he meets departmental requirements.

**111 Piano (1)**

**Tolson, Parris, McKay**

Individual lesson (½ hour), required practice (5 hours). Supplementary fee, \$40. (Fall and spring—as arranged; summer 1965.)

**112 Piano (3)**

**Tolson, Parris, McKay**

Individual lesson (1 hour), required practice (10 hours). For music majors only. Supplementary fee, \$80. (Fall and spring—as arranged.)

**113 Voice (1)**

**Zabawa**

Individual lesson (½ hour), required practice (5 hours). Supplementary fee, \$40. (Fall and spring—as arranged; summer 1965.)

**114 Voice (3)**

**Zabawa**

Individual lesson (1 hour), required practice (10 hours). For music majors only. Supplementary fee, \$80. (Fall and spring—as arranged.)

**115 Organ (1)**

**Scribner**

Individual lesson (½ hour), required practice (5 hours). Supplementary fee, \$40. (Fall and spring—as arranged; summer 1965.)

**116 Organ (3)**

**Scribner**

Individual lesson (1 hour), required practice (10 hours). For music majors only. Supplementary fee, \$80. (Fall and spring—as arranged.)

**117 Orchestral Instrument (1)**

**The Staff**

Individual lesson (½ hour), required practice (5 hours). Supplementary fee, \$40. (Fall and spring—as arranged; summer 1965.)

**118 Orchestral Instrument (3)**

**The Staff**

Individual lesson (1 hour), required practice (10 hours). For music majors only. Supplementary fee, \$80. (Fall and spring—as arranged.)

**Pathology**

*Professors* T. M. Peery (*Chairman*), W. R. Duryee (*Research*), F. N. Miller, Jr., William Newman

*Associate Professor* W. L. Marsh

*Assistant Professors* Lois Platt (*Cytology*), Alexander Breslow, F. S. Jannotta, Gloria Brennan

**115-16 Introduction to Medical Science (1-1)**

**Marsh and Staff**

For students in medical technology at the University Hospital. These lectures, based upon physiology, pathology, and medicine, provide a background for the interpretation of laboratory data. (Academic year—1 hour a week.)



- 117-18 **Principles in Medical Technology (4-4)** Marsh and Staff  
For students in medical technology at the University Hospital. Theories, principles, and sources of error of the methods used in clinical chemistry, clinical bacteriology, serology, hematology, and clinical microscopy. (Academic year—4 hours a week.)
- 119-20 **Medical Technology Laboratory (10-10)** Marsh and Staff  
Practice and experience by rotation through the various divisions of the Pathology laboratories of the University Hospital, as follows: hematology and urinalysis, 12 weeks; chemistry, 12 weeks; bacteriology and parasitology, 10 weeks; blood bank, 8 weeks; serology, 4 weeks; tissue pathology, 4 weeks. (30 hours a week for 50 weeks.)

## Pharmacology

*Professors* H. G. Mandel (*Chairman*), \*Clarke Davison  
*Professorial Lecturer* B. B. Brodie  
*Associate Professors* V. H. Cohn, Jr., Paul Mazel  
*Assistant Professors* T. M. Farber, W. P. Weiss (*Research*), W. R. Jondorf (*Research*), Dezider Gruenberger (*Visiting, Research*)  
*Special Lecturer* F. E. Hahn

- 249-50 **Introduction to Medical Research † (3-3)** The Staff  
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—*anatomical, statistical, physical, chemical, electrical, and radioisotopic*—as applied to biological materials in the medical sciences. Laboratory fee, \$7.50 a semester. (Academic year—W 1-5 pm.)
- 252 **Seminar: Clinical Pharmacology (2)** Weiss  
Special problems in therapeutics with emphasis on drugs used in the treatment of cardiovascular and infectious diseases. Students participate in discussions and preparation of some lectures. Enrollment limited. (Spring—as arranged.)
- 254 **Frontiers in Pharmacology (1)** Mandel and Staff  
Recent advances and fields of active research in pharmacology. Most of the material will be presented by laboratory scientists from neighboring institutions. Limited to 50 medical and graduate students. (Spring—as arranged.)
- 256 **Molecular Pharmacology (1)** Hahn  
Molecular basis and mechanism of action of chemotherapeutic agents. Limited to 50 medical and graduate students. (Spring—as arranged.)
- 258 **Cancer (2)** Mandel and Staff  
Nature and treatment of cancer with particular emphasis on chemotherapy; discussion of the underlying biochemistry of neoplastic tissue and the problems associated with the "rational" approach in pharmacology. Limited to 50 medical and qualified graduate students. (Spring—as arranged.)

\* On sabbatical leave 1965-66.

† An interdepartmental course. The student should register in the department directing his research.

- 261 **Pharmacology (8)** Mandel and Staff  
Lectures, laboratories, and recitations concerning the interaction of drugs and biological systems as a basis for the rational therapy of disease. Open to qualified nonmedical students. (Fall—9 hours a week.)
- 267-68 **Pharmacological Research (3-3)** The Staff  
Primarily for those properly qualified graduate and medical students seeking careers in pharmacology. (Academic year—as arranged.)
- 269-70 **Pharmacology Seminar (1-1)** The Staff  
Recent advances in pharmacology. For those interested in pharmacological research. Open to qualified nonmedical students. (Academic year—2 hours a week.)
- 272 **Physiological Disposition of Drugs (3)** Cohn, Davison  
A lecture and seminar course dealing with the fate of drugs in biological tissue. Discussion of absorption, distribution, chemical alteration, and excretion of drugs, and the physical, chemical, and biological factors affecting these processes. Prerequisite: Pharmacology 261. (1965-66 and alternate years: spring—as arranged.)
- 279-80 **Special Topics in Pharmacology (arr.)** The Staff  
A lecture course dealing with selected aspects of drug action. Prerequisite: Pharmacology 261. (Academic year—as arranged.)
- 281 **Physiological Techniques in Pharmacology—Lecture (1)** Farber, Mazel  
A series of specially selected experiments with supplementary lectures designed to illustrate physiological techniques useful in obtaining information as to mechanism and site of action of pharmacological agents. Prerequisite or concurrent registration: Pharmacology 261. (1965-66 and alternate years: fall—as arranged.)
- 282 **Physiological Techniques in Pharmacology—Laboratory (2)** Farber, Mazel  
A laboratory course designed to accompany 281. Prerequisite or concurrent registration: Pharmacology 261 and 281. (1965-66 and alternate years: fall—as arranged.)
- 283 **Biochemical Techniques in Pharmacology—Lecture (1)** Cohn, Davison  
Pharmacology 283 and 284 combine to make a lecture and laboratory course designed to equip the student with the theory and practice of modern biochemical techniques applicable to the study of the metabolic fate and mechanism of action of drugs. Pharmacology 283 may be taken without 284. Prerequisite or concurrent registration: Pharmacology 261. (1966-67 and alternate years.)
- 284 **Biochemical Techniques in Pharmacology—Laboratory (2)** Cohn, Davison  
A laboratory course designed to accompany 283. Prerequisite or concurrent registration: Pharmacology 261 and 283. (1966-67 and alternate years.)
- 299-300 **Thesis (3-3)** The Staff  
Required of Master of Arts and Master of Science candidates. (Academic year—as arranged.)

## Philosophy

Professor Thelma Lavine

Associate Professor R. H. Schlagel (*Acting Chairman*)

Assistant Professors C. H. Pfuntner, W. B. Griffith

### FIRST GROUP

- 51-52 **Introduction to Philosophy (3-3)** The Staff

A critical introduction to the problems of modern philosophy in relation to scientific and social developments since the Renaissance. This course is not merely intended as an introduction to those courses in philosophy which follow but is a unit complete in itself for those students in other departments interested in the problems of philosophy relevant to modern thought. (Academic year—day and evening; summer 1965.)

- 71 **Philosophy and Literature (3)** Lavine  
(Fall—day.)

### SECOND GROUP

- 111-12 **History of Philosophy (3-3)** Pfuntner

The history of western philosophy from early Greece to Kant, seen as the development and modification of the Hellenic cultural pattern. (Academic year—day.)

- 113 **History of 19th and 20th Century Philosophy (3)** Pfuntner  
European philosophy from the time of Kant. "Isms" and ideologies at the root of contemporary thought. (Fall—day.)

- 121-22 **Logic and Scientific Method (3-3)** Griffith  
*First half:* the elementary principles of valid reasoning with emphasis on developing skill in using these principles, introductory consideration of symbolic logic, the nature of a formal system. *Second half:* general analysis of the methods of investigation and reasoning used in the natural and social sciences, procedures and requirements of definition, classification and sorting, analogical and inductive inference, causal determination, the nature and function of hypothesis, measurement, principles of the theory of probability. (Academic year—evening; summer 1965.)

- 131 **Ethics (3)** Griffith  
A critical examination of traditional ethical theories from Plato to Ayer. Consideration of the theoretical problems of ethics: the meaning of "good," the nature of ethical judgment, the justification of ethical standards. The course aims at enabling the student to develop his own ethical view as a consequence of his greater understanding of moral phenomena. (Fall—day.)

- 151 **The Philosophy of Science (3)** Schlagel  
Investigation of the philosophical implications of the development of scientific concepts and methodology in the physical sciences since the 16th century, concentrating on the conceptual revolutions beginning with the 20th century. (Fall—evening.)

- 152 **Epistemology (3)** Schlagel  
A critical examination of contemporary theories and problems of knowledge. (Spring—evening.)



- 162 **Aesthetics (3)** The Staff  
The nature of aesthetic experience, problems of appreciation and judgment in the arts, and of the theories and process of artistic creation. Emphasis on contemporary arts and criticism. (Spring—day.)
- 172 **American Philosophy (3)** Pfundtner  
The philosophies of Peirce, Royce, James, Dewey, and Santayana as representatives of American thought. (Spring—day; summer 1965.)
- 180 **Philosophy of History (3)** Lavine  
Problems of historical knowledge and explanation. Critique of philosophies of history. (Fall—day.)
- 193 **Topics in Contemporary Philosophy (3)** Schlagel  
Intensive study of one selected topic: cosmology from myth to science. (Summer 1965.)
- 196 **Philosophy of Language (3)** Schlagel  
Investigation of the logical syntax of language, different symbolic forms, the problem of meaning and linguistic reference. (Spring—day.)
- 199–200 **Proseminar: Readings for the Major (3–3)** The Staff  
Conferences and group discussions in preparation for field-of-study major examination. (Academic year—as arranged.)
- THIRD GROUP**
- 201–2 **Readings and Research (3–3)** The Staff  
Advanced readings and reports. Investigation of special problems. (Academic year—as arranged.)
- 211 **Seminar: Plato (3)** Griffith  
Intensive study of Plato's later dialogues. (Not offered 1965–66.)
- 216 **Seminar: Kant (3)** Schlagel  
A study of one of Kant's Critiques. (Fall—evening.)
- 231 **Seminar: Foundations of Value Theory (3)** Griffith  
Study of the general nature of theories of value, with special attention to the presuppositions required and to the problem of validation of normative systems. (Spring—evening.)
- 252 **Seminar: Epistemology (3)** Schlagel  
Intensive study of selected topics in theory of knowledge. (Not offered 1965–66.)
- 262 **Seminar: Aesthetics (3)** The Staff  
Intensive study in selected problems. (Not offered 1965–66.)
- 272 **Seminar: American Philosophy (3)** Pfundtner  
Topic for spring 1966—Development of American Pragmatism. (Spring—evening.)
- 299–300 **Thesis (3–3)** The Staff

#### RELATED COURSES IN OTHER DEPARTMENTS

Anthropology 161 *Language and Culture* (3)  
Classical Languages and Literatures 71–72 *Greek and Roman Backgrounds in Literature* (3–3)

#### 152 PHILOSOPHY

English 125 *Introduction to English Linguistics* (3)  
 History 105-6 *Introduction to the History of Science* (3-3)  
 Mathematics 101 *Introduction to Mathematical Logic* (3)  
 Political Science 117-18 *Political Theory: the Nature and Growth of Political Thought in the West* (3-3)  
 Psychology 196 *History and Systems of Psychology* (3)

## Physical Education for Men \*

*Professors* W. H. Myers (*Acting Chairman*), R. G. Hanken, V. J. DeAngelis

*Associate Professorial Lecturers* W. D. Thompson, J. D. Shirley

*Assistant Professor* R. A. Dearden

*Assistant Professorial Lecturer* Pat Abernethy

*Instructor* C. B. Reed

*Instructor (part-time)* V. D. Elder

### FIRST GROUP

1-2 **Freshman Physical Education** (1-1) The Staff  
 Two periods of supervised activity a week. Physical Education fee†, \$4.50 a semester. (Academic year—as arranged.)

11-12 **Sophomore Physical Education** (1-1) The Staff  
 Two periods of supervised activity a week. Physical Education fee†, \$4.50 a semester. (Academic year—as arranged.)

41 **Personal Health** (1) Reed  
 Physical, mental, and social health of the individual—understanding, significance, and promotion. Emphasis on personal health knowledges for the future teacher. (Spring—day.)

43-44 **Techniques of Physical Education Motor Activities** (2-2) Reed, Elder  
 Fundamental skills, rules, and organization. Physical Education fee †, \$4.50 a semester. (Academic year—day.)

45-46 **Teaching Individual and Dual Sports in Secondary Schools** (2-2) Hanken, Reed  
 Tennis, golf, swimming, wrestling, badminton, bowling. Physical Education fee †, \$4.50 a semester. (Academic year—day.)

48 **Introduction to Recreation** (2) Hanken  
 The role of recreation in modern living; current practices in community recreation work; standards of training, experience, and salary; types of leadership. (Spring—day.)

\* The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of Physical Education, and the student assumes full responsibility therefor.

† The Physical Education fee is required for registration in one or more of the activity courses.

49 **Human Anatomy (3)** Stallings

The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biological Sciences 2. (Fall—day.)

50 **Kinesiology (3)** Lawrence

A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy. (Spring—day.)

53 **Fundamentals of Creative Dance (2 to 3)** Burtner

Technique for training the body. Improvisation for exploration in movement; elements and principles of composition. (Spring—as arranged.)

55-56 **Introduction to Physical Education (1-1)** DeAngelis

Orientation in the problems of physical education, vocational analysis, scientific foundations, and scope of field. (Academic year—day.)

59-60 **Leadership Organization in the Intramural Program (2-2)** DeAngelis

Principles of administration, organization, and supervision of intramural activities in the physical education program of the junior high school, senior high school, and college. (Academic year—day.)

**SECOND GROUP**

101 **Physical Education in the Elementary School (3)** Burtner, Snodgrass

Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the various age levels in elementary school, playground, and settlement house programs. Methods and materials of tumbling, games, dance, and self-testing activities. (Fall—day; spring—evening; summer 1965.)

103 **History and Principles of Physical Education (3)** Stallings, DeAngelis

Survey of history as it relates to contemporary physical education. Study of aims, objectives, and philosophy of physical education. (Fall—day.)

105 **Adapted Physical Education and Physical Examinations (3)**

Cause and correction of faulty body mechanics, physical examination methods for the diagnosis of postural defects, prescription of exercises, and program adaptation. Prerequisite: Physical Education 49 and 50. (Fall—day.)

107 **Teaching Recreational Dance (1 to 2)** Burtner, Mason

Methods and materials for teaching the country and social dances of America and the folk dances of other countries to secondary school age and adult groups. Square-dance calling is included. Physical Education fee\*, \$4.50. (Fall—day.)

113-14 **Practice in Teaching Physical Education Activities (3-3)** Hanken and Staff

Principles and methods applied to learning and teaching physical education activities. Supervised laboratory. Physical Education fee\*, \$4.50 a semester. (Academic year—day.)

115-16 **Teaching Team Sports in Secondary Schools (2 to 4-2 to 4)** DeAngelis, Hanken

Football, basketball, baseball, track and field. Physical Education fee\*, \$4.50 a semester. (Academic year—day.)

\* The Physical Education fee is required for registration in one or more of the activity courses.



- 117 **Teaching Modern Dance (1 to 3)** Burtner  
Techniques for the teaching of movement as a medium of expression. Practical work in body technique, composition, and the analysis of accompaniment for dance including instrumental, voice, and percussion. Application is made to both secondary school and adult age levels. Physical Education fee\*, \$4.50. (1966-67 and alternate years.)
- 118 **Dance Production (1 to 3)** Burtner  
Planning and staging of performances for demonstrations, dance concerts, and folk festivals. Lighting, costuming, sets, and make-up. Choreography for concerts, musicals, and plays for students taking course for two credits. Physical Education fee\*, \$4.50. (1966-67 and alternate years.)
- 121 **School and Community Health Programs (3)** Reed  
Health services, healthful environment, health instruction, sources of material for general health knowledge. Prerequisite: Biological Sciences 2. (Fall—evening.)
- 122 **Methods and Materials for Health Education (3)** Stallings  
Methods and materials for teaching health. Prerequisite: Biological Sciences 2. (Spring—evening.)
- 131 **Tests and Measurements in Physical Education (3)** Dearden  
Critical survey of tests in physical activities, methods of test construction, elementary statistics. (Fall—day.)
- 132 **Camp Leadership (1 to 2)** Snodgrass  
Philosophy and techniques of camp counseling; survey of organization and programs including outdoor education. Also open to both men and women not majoring in Physical Education. (Spring—day.)
- 134 **Rhythmic Analysis in Relation to Movement (3)**  
Kinesthetic awareness of rhythmic flow of movement; its relationship to form; aspects of rhythm—meter, phrase, accent, tempo, duration, intensity, rhythmic patterns, and rhythmic devices. Analysis of rhythmic structure as found in various cultures and eras, such as: primitive dance and song, 14th century French dance and song, modern American jazz. This course combines theory with practical work. Prerequisite: one semester of modern dance or ballet, or the equivalent. (Spring—day.)
- 135-36 **Survey of Dance History (3-3)** Burtner  
The development of dance from primitive ritual to present-day folk, square, social, classical and modern ballet, modern dance, and ethnologic dance. Practical work in dance is included. *First half:* prehistoric to 20th century. *Second half:* the 20th century. (Academic year—evening.)
- 138 **Organization and Administration of Physical Education (3)** Dearden  
Organization and administration of physical education programs in elementary and secondary schools and in colleges. Study of plants, fields, equipment, and programs. (Spring—evening.)
- 151-52 **Recreational Leadership Activities (3-3)** Abernethy  
Fall semester: basic skills for the preschool and school-age child. Laboratory practice in crafts, music, dramatics, physical and social activities. Spring semester: basic skills for the teen-age and adult. Arts and crafts, dramatics, physical and social activities. (1965-66 and alternate years: academic year—evening.)

\* The Physical Education fee is required for registration in one or more of the activity courses.

**158 Safety Education: Care and Responsibility for Athletic Injuries (3)** Dearden

Liability, prevention, and emergency care of all types of injuries with reference to first aid, civil defense, and athletics. Safety education, with emphasis on proper use of personnel, facilities, and equipment. Laboratory experience with physiotherapy equipment. Prerequisite: Biological Sciences 2. (Spring—day.)

**161 Community Organization for Recreation (3)** Thompson  
Resources, principles, and methods in organizing community recreation services. (1966-67 and alternate years.)

**162 Administration of Community Recreation Programs (3)** Thompson  
Factors and problems in administering recreation including surveys, legislation, program, area, facilities, leadership, finance, and public relations. (1966-67 and alternate years.)

**THIRD GROUP**

**211 Problems in Physical Education (3)**  
For experienced teachers. Organization, supervision, and curriculum problems growing out of current issues; program planning policies; competition. (1966-67 and alternate years.)

**220 Problems in Health Education (3)**  
Health needs, policies and program planning, use of community resources, promising practices in the field. (1966-67 and alternate years.)

**231 Evaluation in Physical Education (3)**  
Planning the evaluation program, review of outcomes, analysis of tests and standards, administration and interpretation of tests, guidance. (1965-66 and alternate years: fall—evening.)

**240 Physical Education for the Atypical (3)**  
Adaptations of programs for special cases: low-motor skilled, mentally retarded, emotionally disturbed, physically handicapped. Therapeutic methods in physical education and recreation. (Spring—evening.)

**250 Recreation and Outdoor Education (3)** Thompson  
Current trends in philosophy, principles, practices, and programs for outdoor education, camping, and community-school relationships. (Summer 1965.)

**271-72 Dance Notation (3-3)**  
*First half:* the study of Labanotation—a system of recording elements of space, time, and bodily movement by means of symbols. *Second half:* the study and reconstruction of notated works of 20th century choreographers of American modern dance. (Academic year—as arranged.)

**273 Advanced Choreography \* (3)**  
Advanced problems in creative movement and composition. The choreographing of group and solo works in dance. (Fall and spring—as arranged.)

**297 Advanced Topical Studies \* (3)** Myers, Stallings  
Individual studies of advanced topics; critique and synthesis of research findings and of literature. Prerequisite: Education 295. (Fall and spring—as arranged.)

\* This course may be repeated once for credit.

**156 PHYSICAL EDUCATION FOR MEN**

## Physical Education for Women\*

*Professors* Helen Lawrence (*Emeritus*), Elizabeth Burtner, Loretta Stallings (*Chairman*)

*Associate Professors* Lyndale George, Jeanne Snodgrass

*Associate Professorial Lecturer* W. D. Thompson

*Assistant Professors* Gayle Clapp, Felicia Rochon

*Assistant Professorial Lecturer* Pat Abernethy

*Instructors* Donna Abbey, Kathleen Mason, Nan Smith

*Instructor (part-time)* Mabel McEwan

### FIRST GROUP

- 1-2 **Freshman Physical Education (1-1)** The Staff  
One period of fundamentals of health and physical education and two periods a week chosen from the activities offered each semester. Physical Education fee,† \$4.50 a semester. (Academic year—day.)
- 11-12 **Sophomore Physical Education (1-1)** The Staff  
Two periods a week chosen from the activities offered each semester. Physical Education fee,† \$4.50 a semester. (Academic year—day.)
- 43-44 **Techniques of Physical Education Motor Activities (2 to 3-2 to 3)** The Staff  
Fundamental skills. Physical Education fee,† \$4.50 a semester. (Academic year—as arranged.)
- 49 **Human Anatomy (3)** Stallings  
The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biological Sciences 2. (Fall—day.)
- 50 **Kinesiology (3)** Lawrence  
A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy. (Spring—day.)
- 51-52 **Teaching Physical Education Activities (2 to 3-2 to 3)** The Staff  
*First half:* Basketball, tennis, and badminton. *Second half:* softball and archery. (1965-66 and alternate years: academic year—day.)
- 53 **Fundamentals of Creative Dance (2 to 3)** Burtner  
Techniques for training the body. Improvisation for exploration in movement; elements and principles of composition. (Spring—as arranged.)

### SECOND GROUP

- 101 **Physical Education in the Elementary School (3)** Burtner, Snodgrass  
Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the

\* The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of Physical Education, and the student assumes full responsibility therefor.

† The Physical Education fee is required for registration in one or more of the activity courses



various age levels in elementary school and playground programs. Methods and materials of tumbling, games, dance, self-testing activities, and body mechanics. (Fall—day; spring—evening; summer 1965.)

- 103 **History and Principles of Physical Education** (3) Stallings, DeAngelis  
Survey of history as it relates to contemporary physical education. Study of aims, objectives, and philosophy of physical education. (Fall—day.)
- 105 **Adapted Physical Education and Physical Examinations** (3)  
Cause and correction of faulty body mechanics, physical examination methods for the diagnosis of postural defects, prescription of exercises, and program adaptation. Prerequisite: Physical Education 49 and 50. (Fall—day.)
- 107 **Teaching Recreational Dance** (1 to 2) Burtner, Mason  
Methods and materials for teaching the country and social dances of America and the folk dances of other countries to secondary school age and adult groups. Square-dance calling is included. Physical Education fee, \*\$4.50. (Fall—day.)
- 111-12 **Teaching Physical Education Activities** (2 to 3-2 to 3) The Staff  
*First half:* field hockey, soccer, and speedball. *Second half:* gymnastics, tumbling, and track and field. (1966-67 and alternate years.)
- 113-14 **Practice in Teaching Physical Education Activities** The Staff  
(2 to 4-2 to 4)  
Principles and methods applied to learning and teaching physical education activities. Supervised laboratory. Physical Education fee, \*\$4.50 a semester. (Academic year—as arranged.)
- 117 **Teaching Modern Dance** (1 to 3) Burtner  
Techniques for the teaching of movement as a medium of expression. Practical work in body technique, composition, and the analysis of accompaniment for dance including instrumental, voice, and percussion. Application is made to both secondary school and adult age levels. Physical Education fee, \*\$4.50. (1966-67 and alternate years.)
- 118 **Dance Production** (1 to 3) Burtner  
Planning and staging of performances for demonstrations, dance concerts, and folk festivals. Lighting, costuming, sets, and make-up. Choreography for concerts, musicals, and plays for students taking course for two credits. Physical Education fee, \*\$4.50. (1966-67 and alternate years.)
- 121 **School and Community Health Programs** (3) Reed  
Health services, healthful environment, health instruction, sources of material for general health knowledge. Prerequisite: Biological Sciences 2. (Fall—evening.)
- 122 **Methods and Materials for Health Education** (3) Stallings  
Methods and materials for teaching health. Prerequisite: Biological Sciences 2. (Spring—evening.)
- 131 **Tests and Measurements in Physical Education** (3) Dearden  
Critical survey of tests in physical activities, methods of test construction, elementary statistics. (Fall—day.)

\* The Physical Education fee is required for registration in one or more of the activity courses.

- 132 Camp Leadership (1 to 2)** Clapp  
Philosophy and techniques of camp counseling; survey of organization and programs including outdoor education. Also open to both men and women not majoring in Physical Education. (Spring—day.)
- 134 Rhythmic Analysis in Relation to Movement (3)**  
Kinesthetic awareness of rhythmic flow of movement; its relationship to form; aspects of rhythm—meter, phrase, accent, tempo, duration, intensity, rhythmic patterns, and rhythmic devices. Analysis of rhythmic structure as found in various cultures and eras, such as: primitive dance and song, 14th century French dance and song, modern American jazz. This course combines theory with practical work. Prerequisite: one semester of modern dance or ballet, or the equivalent. (Spring—day.)
- 135-36 Survey of Dance History (3-3)** Burtner  
The development of dance from primitive ritual to present-day folk, square, social, classical and modern ballet, modern dance, and ethnologic dance. Practical work in dance is included. *First half:* prehistoric to 20th century. *Second half:* the 20th century. (Academic year—evening.)
- 138 Organization and Administration of Physical Education (3)** Dearden  
Organization and administration of physical education programs in elementary and secondary schools and in colleges. Study of plants, fields, equipment, and programs. (Spring—evening.)
- 151-52 Recreational Leadership Activities (3-3)** Abernethy  
Fall semester: basic skills for the preschool and school-age child. Laboratory practice in crafts, music, dramatics, physical and social activities. Spring semester: basic skills for the teen-age and adult. Arts and crafts, dramatics, physical and social activities. (1965-66 and alternate years: academic year—evening.)
- 158 Safety Education: Care and Responsibility for Athletic Injuries (3)** Dearden  
Liability, prevention, and emergency care of all types of injuries with reference to first aid, civil defense, and athletics. Safety education, with emphasis on proper use of personnel, facilities, and equipment. Laboratory experience with physiotherapy equipment. Prerequisite: Biological Sciences 2. (Spring—day.)
- 161 Community Organization for Recreation (3)** Thompson  
Resources, principles, and methods in organizing community recreation services. (1966-67 and alternate years.)
- 162 Administration of Community Recreation Programs (3)** Thompson  
Factors and problems in administering recreation including surveys, legislation, program, area, facilities, leadership, finance, and public relations. (1966-67 and alternate years.)

### THIRD GROUP

- 211 Problems in Physical Education (3)**  
For experienced teachers. Organization, supervision, and curriculum problems growing out of current issues; program planning policies; competition. (1966-67 and alternate years.)

- 220 **Problems in Health Education (3)**  
Health needs, policies and program planning, use of community resources, promising practices in the field. (1966-67 and alternate years.)
- 231 **Evaluation in Physical Education (3)**  
Planning the evaluation program, review of outcomes, analysis of tests and standards, administration and interpretation of tests, guidance. (1965-66 and alternate years: fall—evening.)
- 240 **Physical Education for the Atypical (3)**  
Adaptations of programs for special cases: low-motor skilled, mentally retarded, emotionally disturbed, physically handicapped. Therapeutic methods in physical education and recreation. (Spring—evening.)
- 250 **Recreation and Outdoor Education (3)** Thompson  
Current trends in philosophy, principles, practices, and programs for outdoor education, camping, and community-school relationships. (Summer 1965.)
- 271-72 **Dance Notation (3-3)**  
*First half:* the study of Labanotation—a system of recording elements of space, time, and bodily movement by means of symbols. *Second half:* the study and reconstruction of notated works of 20th century choreographers of American modern dance. (Academic year—as arranged.)
- 273 **Advanced Choreography \* (3)**  
Advanced problems in creative movement and composition. The choreographing of group and solo works in dance. (Fall and spring—as arranged.)
- 297 **Advanced Topical Studies \* (3)** Myers, Stallings  
Individual studies of advanced topics; critique and synthesis of research findings and of literature. Prerequisite: Education 295. (Fall and spring—as arranged.)

## Physics

*Professors* G. M. Koehl, †Herbert Jehle, H. H. Hobbs (*Chairman*)  
*Associate Professors* A. J. Zuchelli, Otto Bergmann, F. R. Tangherlini  
*Associate Professorial Lecturers* H. H. Landon, Jr., Herbert Rabin, W. J. Condell, Jr.

*Assistant Professors* S. S. Yeandle, Jr., Margaret Montzka, J. M. Harrison, S. P. Bjorklund, W. H. Venable, Jr., Francisco Prats

*Assistant Professorial Lecturers* J. N. Tevis, K. F. Oerlein

*Instructor* C. G. Dease

\* This course may be repeated once for credit.

† On sabbatical leave 1965-66.



## FIRST GROUP

- 1-2 General Physics (4-4)** The Staff  
Lecture (2 hours), recitation (1 hour), laboratory (2½ hours). Principal phenomena of classical and modern physics. *First half*: a study in depth of selected topics in classical physics which form a foundation for and lead to an understanding of modern physics. *Second half*: the fundamental concepts of atomic, nuclear, solid state, and related fields of modern physics. Prerequisite: two years of college preparatory mathematics or concurrent registration in Mathematics 6. Material fee, \$11 a semester. (*First half*: fall—day and evening; spring—day; summer 1965. *Second half*: fall—day; spring—day and evening; summer 1965.)
- 31-32 Introduction to Theoretical Physics (2-2)** The Staff  
The theoretical structure of physics with emphasis on the appropriate analytical techniques. Prerequisite: one year of calculus and Physics 1-2. (Academic year—as arranged.)
- 51-52 Introduction to Experimental Physics (2-2)** The Staff  
Experiments and lectures on the basic phenomena of physics and techniques of experimentation. Designed to show the phenomena that are the basis of the theoretical aspect of physics and to introduce the student to experimental techniques necessary for further work in natural sciences. Prerequisite: Physics 1-2 and one year of Calculus. Material fee, \$11 a semester. (Academic year—day and evening.)

## SECOND GROUP\*

- 113 Atomic Physics (3)**  
(Offered last time summer 1965.)
- 116 Quantum and Solid State Physics (3)** The Staff  
Primarily for engineers. Prerequisite: Physics 16, Mathematics 111. (Spring—evening.)
- 151-52 Intermediate Laboratory (2-2)** The Staff  
Independent work of an advanced nature designed to introduce the student to laboratory and shop techniques and the use of specialized instruments. Prerequisite: Physics 51-52. Material fee, \$11 a semester. (Academic year—as arranged.)
- 161 Mechanics I (3)** The Staff  
Mechanics of mass points and rigid bodies. Newton's Laws, conservation laws, Euler's equations, inertia tensor, small vibrations, and elements of Lagrange's and Hamilton's equations. (Fall—as arranged.)
- 162 Mechanics II (3)** The Staff  
Basic aspects of elasticity and fluid dynamics, strain tensor, stress tensor, equations of equilibrium, elastic waves, ideal and viscous fluids. (Spring—as arranged.)
- 163 Optics (3)** The Staff  
Oscillations and waves, energy and momentum of the electromagnetic field, interference, diffraction, geometrical optics, optics of crystals and other media, dispersion. (Fall—as arranged; summer 1965.)

\* Physics 1-2, 31-32 (or the equivalent), and the consent of a departmental adviser are prerequisite to all second-group courses.

- 164 Thermodynamics (3)** **The Staff**  
 Basic principles of thermodynamics, reversible changes, applications to simple systems, thermodynamic potentials, phase equilibrium. (Spring—as arranged.)
- 165-66 Electromagnetic Theory (3-3)** **The Staff**  
 Development of Maxwell's field equations using vector and tensor calculus, electrostatics, special functions, stationary and nonstationary phenomena, basic circuit theory, electromagnetic waves and radiation, relativistic effects, microscopic basis of the macroscopic theory. (Academic year—as arranged.)
- 167-68 Modern Physics (3-3)** **The Staff**  
 The experimental basis of modern physics and an introduction to quantum mechanics and statistical mechanics with applications to atomic and nuclear physics. (Academic year—as arranged.)
- 170 Elementary Solid State Physics (3)** **The Staff**  
 Dielectric and magnetic properties of solids, behavior of electrons in metals and semi-conductors, lattice defects. (Spring—evening.)
- 172 Biophysics (3)** **The Staff**  
 Molecular basis of biophysics, biosynthesis and reproduction. (Fall—evening.)
- 175 Nuclear Physics (3)** **Landon**  
 Structure and stability of atomic nuclei, nuclear transformations and reactions, radiations of nuclei, fission. (Fall—as arranged.)

#### **THIRD GROUP\***

- 231 Electromagnetic Theory: Macroscopic Effects (3)** **The Staff**  
 An advanced presentation of those aspects of electromagnetism having to do with fields in the vacuum and in media, their determination in terms of physical boundary conditions and their effects upon charges and matter; definition of the field quantities, the experimental field relations, solutions for the fields, the effects of dielectrics and magnetic media, time dependent solutions, and basic aspects of optics. (Fall—as arranged.)
- 232 Advanced Mechanics (3)** **The Staff**  
 The analytic methods of mechanics, which form a basis for modern theory: variational principles, Lagrange's equations, the Hamiltonian formulation, canonical transformations, classical perturbation theory, the transition to the continuum. (Spring—as arranged.)
- 233-34 Quantum Mechanics (3-3)** **The Staff**  
 The general aspects of quantum mechanics with emphasis upon the developmental principles involved rather than specific applications. Operators and linear algebra, representations and transformation theory, Schrodinger and Heisenberg pictures and their equivalence, eigenstates of the energy, momentum, angular momentum, Pauli theory of the spin, the semiclassical limit, perturbation theory, scattering theory, and the time development operator. (Academic year—as arranged.)
- 235 Special Relativity (3)** **The Staff**  
 The application of relativistic concepts to the basic fields of physics: space and time, mechanics of point particles, tensors and covariant mechanics of

\* Consent of a departmental graduate adviser is required for admission to all third-group courses.

point particles, covariant form of electromagnetism and its connection to Maxwell's equations, relativistic variational principles and conservation laws, relativistic Schrodinger equation, the Dirac equation, and the hydrogen atom. (Fall—as arranged.)

**236 Electromagnetic Theory: Electrodynamics and Radiative Effects (3)** The Staff

Lienard-Wiechert potentials, radiation from moving charges, multipole fields, covariant methods, the self-field problem, and Dirac's classical radiation theory. (Spring—as arranged.)

**241 Statistical Mechanics (3)** Tangherlini

An advanced analysis of atomic configurations under thermodynamic conditions using partition functions and cluster expansion techniques. Ideal gases and nonideal gases, electron plasmas, and the liquid state are considered. (Fall—as arranged.)

**242 Atomic and Molecular Structure (3)** Jehle

The structure of atoms and collections of atoms, the energy levels, binding energy, dipole moments, and optical activity. Hartree and Hartree-Fock equations, spin-effects, molecular orbitals, rotational and vibrational effects, paramagnetic resonance, chemical binding. (Spring—as arranged.)

**243 Solid State Physics: Structure and Binding (3)** Hobbs

The atomic structure of solids and analysis of the binding of crystals. Crystalline forms and symmetries, atomic vibrations and specific heats, sound and optical propagation, the Mossbauer effect, crystalline defects. (Fall—as arranged.)

**244 Solid State Physics: Electronic Processes in Metals (3)** Zuchelli

The phenomena in metals and semiconductors determined by the electronic states allowed: binding, specific heats, magnetic properties, transport phenomena. The effects are handled primarily from the independent particle approximation and many-body aspects are discussed. (1965-66 and alternate years: spring—as arranged.)

**245 Quantum Electrodynamics: Theory and Applications (3)** Zuchelli

A noncovariant presentation of the lower order effects depending upon the quantal nature of the electromagnetic field: Hamiltonian formulation and field quantization, perturbation calculations, Compton effect, photoelectric effect, electron-electron scattering, pair creation and annihilation, indices of refraction, divergence difficulties. The physical content of the theory and the problems of computation are presented as a preparation for the more formal nature of the advanced approaches. (1966-67 and alternate years.)

**246 Quantum Field Theory (3)** Bergmann

A covariant presentation of the general theory of quantized fields, Boson and Fermion fields, theory of the S-matrix, dispersion relations, and the renormalization program. (1966-67 and alternate years.)

**247 Quantum Theory of Many-body Systems (3)** Bergmann

Modern approaches to systems of many interacting particles: Bohm-Pines theory, superconductivity, development of the effective potential, problems connected with the Fermi surface, perturbative verification of collective motions. (Fall—as arranged.)



- 248 **Elementary Particles (3)** Bjorklund  
Scalar, vector, and spinor fields and their particle aspects, weak and strong interactions, symmetry properties and conservation laws. (Spring—evening.)
- 249 **Statistical Processes (3)** Zuchelli  
Extension of statistical concepts to irreversible processes. Ergodic behavior, classical and quantum approaches to irreversible effects in large systems, master equations, the recurrence paradox and the development of thermodynamic concepts of affinities and fluxes. (Fall—as arranged.)
- 250 **Selected Topics in Modern Physics (3)** The Staff  
Complements the established curriculum by affording formal instruction in topics of immediate interest to the development of physics and in particular to the members of the graduate research group. (This course may be taken several times for credit with the permission of the graduate adviser.) (Spring—evening.)
- 251-52 **Laboratory (2-2)** The Staff  
Individual work on special topics. Material fee, \$11 a semester. (Academic year: Saturdays—as arranged.)
- 254 **General Theory of Relativity** Tangherlini  
Presentation of the physical principles and mathematical methods underlying Einstein's field equation, geodesic equations of motion, checks of the theory, action principle, conservation laws, perturbation theory, gravitational radiation theory, relativistic cosmology. (Spring—as arranged.)
- 291-92 **Seminar (1-1)** The Staff  
Individual investigation of special problems. All students registered for Master's degrees in physics are expected to attend this seminar during residence for the degree, and to take part in its programs. Credit for participation in the seminar work is obtained during the last two semesters of residence; this credit, however, is based upon the seminar work during the entire period of residence. (Academic year—evening.)
- 299-300 **Thesis (3-3)** The Staff  
(Academic year—as arranged; summer 1965.)

## Physiology

*Professor C. S. Tidball (Chairman)*

*Professorial Lecturers Audrey Davis, L. L. Langley*

*Associate Professors Hortense Louckes (Research), Elizabeth Tidball (Research), Q. L. Hartwig (Research)*

*Associate Professorial Lecturer P. G. Nelson*

*Assistant Professors Marie Cassidy, Esat Cirpili (Visiting)*

*Assistant Professorial Lecturers J. F. Hoffman, D. P. Rall, R. J. Podolsky, Barbara Alving, J. B. Block, J. S. Skinner, R. E. Alving, Elizabeth Stephenson*

*Instructors (part-time) W. A. Hagins, M. B. Burg, J. P. Gilmore, E. S. Henderson, Lawrence Rabinowitz, G. T. Ross, Richard Moore, R. H. Adamson*

*Special Lecturers S. J. Sarnoff, J. H. U. Brown*

- 211-12 **Problems in Physiology** (arr.) The Staff  
Directed study under the supervision of a staff member. Admission by permission of the instructor. (Academic year—as arranged.)
- 221-22 **Physiology Seminar** (1-1) Louckes, Stephenson  
Prerequisite: Physiology 232 and a reading knowledge of French or German. (Academic year—Th 1 pm.)
- 232 **Mammalian Physiology** (10) The Staff  
Lecture 6 hours a week, conference 2 hours a week, laboratory 6 hours a week. Lecture and laboratory work in all divisions of physiology for medical and graduate students. Prerequisite: Chemistry 151-52, Physics 1-2, or the equivalent. Prerequisite or concurrent registration: Biochemistry 221-22 or the equivalent. (Spring—MTWF 1-5 pm.)
- 251 **History of Medicine** (1) E. Tidball  
Lecture (1 hour). Primarily an elective course for medical students; other students are admitted with the consent of the instructor. (Fall—T 11 am.)
- 253 **Electronic Instrumentation** (2) B. Alving  
Lecture (1 hour), laboratory (3 hours). Fundamentals of electronics and their application to measurement of physiologic phenomena. Prerequisite: Mathematics 22, Physics 1-2, and the consent of the instructor. (1966-67 and alternate years: fall—as arranged.)
- 255 **Introduction to Electrocardiography** (1) R. Alving, Caceres, and Staff  
Lecture or laboratory (1 hour). These sessions are intended to provide a basic understanding of cardiac electrical activity, the means used to record it, and a limited amount of information on the application of these principles to the diagnosis of cardiac disease. (Fall—T 4-5 pm.)
- 257 **Evaluation of Scientific Literature** (1) C. Tidball and Staff  
Conference (1 hour). Discussion structured around the criteria used to evaluate a scientific publication. Reports from the literature are made. (Fall—Th 11 am.)
- 259 **Comparative Physiology** (2) The Staff  
Lectures and seminars on topics of current interest in comparative physiology with emphasis on nonmammalian forms. Prerequisite: Physiology 232 or Biological Sciences 162, and the consent of the instructor. (1966-67 and every fourth year.)
- 265 **Advanced Cellular Physiology** (2)  
Lecture (2 hours). Prerequisite: Physiology 232. (1965-66 and alternate years: fall—as arranged.)
- 267 **Advanced Environmental Physiology** (2)  
Lecture (2 hours). Prerequisite: Physiology 232. (1966-67 and alternate years: fall—as arranged.)
- 275 **Advanced Cardiovascular Physiology** (2)  
Lecture (2 hours). Prerequisite: Physiology 232. (1965-66 and every third year: fall—as arranged.)
- 295-96 **Research** (arr.) The Staff  
Prerequisite: Physiology 232 or the equivalent. (Academic year—as arranged.)
- 299-300 **Thesis** (3-3) The Staff

## Political Science

*Professors* W. R. West (*Emeritus*), J. W. Brewer, W. H. Kraus, K. L. London, R. E. Purcell, H. M. Stout, H. L. LeBlanc (*Chairman*), Benjamin Nimer

*Professorial Lecturers* F. M. Riddick, F. L. Hadsel, E. M. Glick

*Associate Professors* H. R. Ludden, \*R. S. Jordan, H. C. Hinton

*Assistant Professors* J. A. Morgan, Jr., Bernard Reich, C. F. Elliott

*Assistant Professorial Lecturers* C. H. Slayman, D. T. Allensworth, Sally Shames

*Instructor* T. D. Mead

### FIRST GROUP

#### 1 Introduction to Government (3)

The Staff

Basic principles and problems of political life: theories, forms, and processes of government in the United States and foreign countries. Attention is also given to international relations. (Fall—evening; spring—day.)

#### 9-10 Government of the United States † (3-3)

The Staff

*First half:* structure, powers, and operation of the Federal Government: Congress, the President, and the Supreme Court; elections, political parties, and pressure groups. *Second half:* state and local governments; civil rights; major functions of government at federal, state, and local levels. (*First half:* fall—day and evening; spring—day; summer 1965. *Second half:* fall—day; spring—day and evening; summer 1965.)

### SECOND GROUP†

#### 101 The Far East in the Modern World (3)

Michael

The general character of Far Eastern societies and their response to the impact of America, Europe, and Russia. Some attention to American policy in the Far East and the influence of world communism. (Fall—day.)

#### 104 State and Local Governments (3)

State, municipal, and other local governmental forms, operations, and problems, with attention to policy formulation and administration, and to the forces of practical politics. (Spring—day.)

#### 107 Problems in Modern Political Thought (3)

Kraus

Development of democratic political institutions and analysis of the main challenges to constitutional democracy in the 19th and 20th centuries. (Not offered 1965-66.)

#### 111 Introduction to Comparative Government and Politics (3)

Stout

Government and politics of the principal constitutional democracies of Western Europe: Great Britain and France. (Fall—evening.)

#### 112 Introduction to Comparative Government and Politics (3)

Stout

Government and politics of the principal political systems of Central and Eastern Europe: Germany and the Soviet Union. (Spring—evening.)

#### 113 Political Problems of the British Commonwealth of Nations (3)

Stout

From Colonial Empire to modern Commonwealth: questions of equal

\* On leave of absence 1965-66.

† Political Science 9-10 is prerequisite to all second-group courses.



partnership; governments and policies in the principal Commonwealth states; problems of new states in Asia and Africa. (Fall—day.)

**117-18 Political Theory: the Nature and Growth of Political Thought Kraus in the West (3-3)**

*First half:* from Classical Antiquity to the Middle Ages; the forging of the western political tradition. *Second half:* from the Renaissance and Reformation to recent times. Theoretical foundations of the modern state: morals and politics, sovereignty, absolutism, and resistance; liberalism, democracy, and conservatism. (Academic year—day.)

**119-20 Foundations of American Democracy (3-3) Morgan**

Introduction to political thought in the United States from colonial times to the present. (Academic year—day; summer 1965—Political Science 119 (3).)

**121-22 The Constitution of the United States (3-3) West**

Judicial power of federal courts in constitutional interpretation. *First half:* emphasis on separation of powers, federal-state relationships, and taxation. *Second half:* emphasis on constitutional protection of civil rights. (Academic year—day.)

**125 Legislative Organizations (3) Riddick**

A study of Congress: constitutional aspects, legal analysis of make-up, and political organization. Political and parliamentary procedures used in the preparation and enactment of legislation. (1965-66 and alternate years: fall—evening.)

**141 The Development of Legal Institutions (3) Brewer**

Introduction to historical jurisprudence: primary attention to the origins of the Roman Law of Continental Europe and of the Anglo-Saxon Common Law. (Fall—day.)

**145 Political Parties and Politics (3) LeBlanc**

Organization and operations of political parties in the United States: major and minor parties, bosses and corruption, nominations and elections, influence on President and Congress. (Fall—day.)

**146 Political Pressures and Public Reactions (3) Ludden**

Public opinion, special interest lobbies, and pressure groups as they operate on government to influence public policy. (Spring—day.)

**151-52 Public Administration (3-3)**

Introductory survey of the theory and practice of governmental administration and its relation to politics, legislation, the courts, and nongovernmental organizations and interests. (Academic year—day.)

**157-58 Current Problems in Domestic Politics (1-1) Shames**

Analysis of outstanding contemporary issues in internal American politics with discussion of problems and policies. (Academic year—evening.)

**167 Foreign Policy of the United States (3) Reich**

The study of the constitutional and political factors that determine the formulation and execution of the foreign policy of the United States. (Fall—day; summer 1965.)

**171 International Politics (3) Purcell, Nimer**

Basic forces underlying the conduct of international relations and the formation of foreign policy: power politics, imperialism, collective security, and international cooperation. (Fall—day and evening; summer 1965.)

- 172 **Organization and Function of the United Nations** (3) Purcell  
(Formerly International Organization: the United Nations)  
Development and current operation of international organization within the system of sovereign states with emphasis on the United Nations. (Spring—day and evening.)
- 177 **Recent Trends in Latin American Politics and Government** (3) Davis  
Types of government, recent developments, and current political conditions in each of the twenty Latin American republics. (Fall—evening; summer 1965.)
- 178 **International Politics in the Western Hemisphere** (3) Davis  
Political relations of the American Republics in the 19th and 20th centuries, the development of Pan Americanism and the Organization of American States. (Spring—evening.)
- 181-82 **Survey of Public International Law and Organization** (3-3) Brewer  
(Formerly International Law)  
Survey of the public law of nations with emphasis on the law of peace. Neutrality and the so-called law of war receive attention in the second semester. (Academic year—day and evening; summer 1965—Political Science 181 (3).)
- 187-88 **Current Problems in International Politics** (1-1) Shames  
Analysis of outstanding contemporary international issues with discussion of problems and policies. (Academic year—evening.)
- 190 **Politics of Middle and Southern Africa** (3) Nimer  
(Political Science 190, 191, and 192 replace former 191 and 192)  
The political life of the states and dependent territories of non-Mediterranean Africa, including the upper Nile valley and the Horn of Africa. Special attention to the specifically regional aspect of the foreign policies of these countries. (Fall—evening; summer 1965.)
- 191 **Governments and Politics of the Middle East** (3) Reich  
(Political Science 190, 191, and 192 replace former 191 and 192)  
Domestic and international politics of the Eastern Arab States and Principalities, Turkey, Iran, and Israel. Attention will be given to their roles in regional and international organizations. (Fall—evening.)
- 192 **Governments and Politics of North Africa** (3) Reich  
(Political Science 190, 191, and 192 replace former 191 and 192)  
Domestic and international politics of Algeria, Tunisia, Morocco, Libya, Egypt, and Sudan. Attention will be given to their relations with the states of the Middle East. (Spring—evening.)
- 193 **Governments and Politics of South and Southeast Asia** (3)  
(Political Science 193 and 194 replace former 194)  
Domestic and international politics of the major states in the area with particular reference to India. (Fall—evening.)
- 194 **Governments of China and Japan** (3) Michael  
(Political Science 193 and 194 replace former 194)  
Institutions and processes of government of contemporary China and Japan, with some historical background. Special attention will be paid to ideological forces. (Spring—evening.)
- 196 **Problems of Modern Political Leadership** (3)  
Lectures and discussions on problems of political leadership in developing states. (Summer 1965.)



- 197 **Proseminar: International Affairs—Strategies of Contemporary American Foreign Policy (3)** Nimer

Analysis of diplomatic, economic, psychological, and military problems of United States foreign policy. Readings, term papers, and discussion. Primarily for seniors in the International Affairs curriculum; open to a limited number of other qualified students. (Fall—day; spring—evening; summer 1965.)

- 198 **Contemporary Trends in Political Science (3)**

Lectures and discussions emphasizing recent developments of research and theory applicable to developing states. (Summer 1965.)

- 199 **American Government and Politics (3)** LeBlanc

Reading and research as a basis for analyzing significant problems of American government and politics. Open to senior students in the Public Affairs and Political Science curricula. (Spring—day.)

### THIRD GROUP

- 203-4 **State and Local Governments (3-3)**

*First half:* readings and group discussions on the process of politics at the state and local level. *Second half:* advanced research in selected topics of state and local politics. (Academic year—evening.)

- 209-10 **Seminar: the Federal Government of the United States (3-3)** West

Advanced research including the legislative problems of Congress; relations of Congress with the Administration; constitutional and political powers of the President, the Cabinet, and the Executive Office of the President; the practical politics of the presidency; and presidential policy leadership and control. (Academic year—evening.)

- 211 **Readings in Comparative Government and Politics (3)** Kraus  
(Formerly Political Science 213)

Readings and group discussions on methodological questions, comparative political and administrative institutions with attention to legislatures, the changing role of the executive, political parties, constitutional and totalitarian approaches to public management and public service, the role of the military, etc. (Fall—day.)

- 212 **Seminar: Comparative Government and Politics (3)** Kraus

Selected topics and problems on comparative political and administrative institutions and the politics of modern constitutional governments and dictatorships. Each semester is devoted to a selected country or significant institutional or policy problem. Attention will be directed to questions of method. (Spring—day.)

- 217 **Seminar: Topics in Political Theory (3)** Kraus

Research and discussion on problems of modern political and constitutional theory, theoretical aspects of representative government, democracy, socialism, and totalitarianism. Each semester is devoted to a separately announced topic, such as socialism and communism, theories of resistance and revolution, problems of democratic theory. (Spring—evening.)

- 218 **Reading Course in Political Theory (3)** Kraus  
(Formerly Political Science 220)

Readings and group discussions, principally on modern political and constitutional theory since the 17th and 18th centuries. (Fall—evening.)



- 221-22 **The United States Constitution and the Judicial Function (3-3)** Morgan  
Reading and research as a basis for an analysis of constitutional politics and law making. (Academic year—evening.)
- 235 **Metropolitan Problems (3)**  
Growth of American cities and changing land use patterns in relation to internal transportation systems. The respective roles of the private automobile and of public transportation. The problems of financing and administering public transportation systems under public and private ownership. (Fall—evening.)
- 245-46 **The American Political Process: Political Parties and Interest Groups (3-3)** LeBlanc  
*First half:* readings and group discussions on the nature and functions of political parties and the role and techniques of political interest groups. *Second half:* seminar on selected topics of American politics requiring the use of basic research materials. (Academic year—evening.)
- 267 **Seminar: Foreign Policy of the United States (3)** Purcell  
Research and selected reading as the basis for an analysis of the foreign policy of the United States, with particular reference to the decision-making process and the execution of policy. (Fall—evening.)
- 268 **Seminar: Comparative Foreign Policies (3)** Stout  
(Political Science 268 replaces former 274)  
Research and selected reading as the basis for an analysis of the foreign policies of major powers, with particular reference to the decision-making process and the execution of policy. (Spring—evening.)
- 271-72 **Problems in International Organization (3-3)** Ludden  
Reading and research as a basis for analyzing developments in general and regional international organizations. (Academic year—evening.)
- 273 **Public Opinion and Foreign Policy (3)** Ludden  
Development, organization, and operation of international information programs by major world powers. Public opinion in the United States influencing the formation and conduct of foreign policy. (Fall—evening.)
- 275-76 **Problems in International Politics (3-3)** Nimer  
(Political Science 275-76 replaces former 279 and 275)  
*First half:* readings and discussions to establish familiarity with both recent and older works of theoretical significance in the field of international politics. *Second half:* examination by means of individual research and class discussion of selected international political processes. Attention to factual and value problems. (Academic year—evening; summer 1965—Political Science 275 (3).)
- 277 **Seminar: Latin American Government (3)** Davis  
Analysis of the political structures of selected Latin American republics. Two comparable governments studied each year. (Fall—evening.)
- 278 **Seminar: Latin American Political Philosophy (3)** Davis  
Research in political personalities and philosophies of 19th and 20th century Latin America. (Spring—evening.)
- 281-82 **Seminar: Public International Law (3-3)** Brewer  
Research in the public law of nations, with special attention to problems of

peaceful settlement, sanctions, war, neutrality, and state jurisdiction, and to their political implications. (Academic year—day.)

- 290 **Reading Course in African International Politics** (3) Nimer  
Readings and discussions on selected topics in the international politics of Africa: intra-African regional relations, political unions, the African states, and the extra-continental world. (Spring—evening.)
- 291 **Government and Politics of the Middle East** (3) Reich  
(Political Science 291 and 292 replace former 292)  
Reading and research in selected problems in the government and politics and international relations of the Middle East. (Fall—evening.)
- 292 **Government and Politics of North Africa** (3) Reich  
(Political Science 291 and 292 replace former 292)  
Reading and research in selected problems in the government and politics and international relations of North Africa. (Spring—evening.)
- 293 **Seminar: Governments and Politics of South and Southeast Asia** (3) Purcell  
(Political Science 293 replaces former 293-94)  
Research and selected reading as the basis for an analysis of the structure, problems, and policies of the governments of selected countries in the area with particular reference to India. (Spring—evening.)
- 299-300 **Thesis** (3-3) The Staff  
(Academic year—as arranged; summer 1965.)

#### INSTITUTE FOR SINO-SOVIET STUDIES

- 160 *Theory and Practice of Communism* \* (3)  
161 *Soviet Government and Politics* \* (3)  
162 *Communist Chinese Government and Politics* \* (3)  
215-16 *Seminar: the Sino-Soviet Blocs in World Affairs I-II* (3-3)  
224 *Readings in Socialism and Communism* (3)  
225 *Seminar: Theoretical Problems of Marxism-Leninism* (3)  
227 *Seminar: the Politics of Eastern Europe* (3)  
230 *Seminar: Operational Techniques of International Communism* (3)  
231 *Seminar: Sino-Soviet Relations* (3)  
233 *Seminar: Soviet Government and Politics* (3)  
234 *Seminar: Soviet Internal Policy* (3)  
236 *Seminar: Trade Unions and Mass Activism in the Soviet System* (3)  
237 *Chinese Law* (3)  
238 *Soviet Law* (3)  
253 *Seminar: Chinese Government and Politics* (3)  
254 *Interuniversity Research Colloquium on Modern China* (3)  
257 *Seminar: Communism in Developing Countries* (3)  
269 *Seminar: Soviet Foreign Policy* (3)  
270 *Seminar: the Soviet Foreign Policy Process* (3)  
288 *Seminar: Soviet Military Policy and Strategy* (3)  
295 *Seminar: China in the Communist Bloc* (3)  
296 *Seminar: the Communist Bloc in Far Eastern International Politics* (3)

\* Offered in a Special Program on Communist Affairs—Summer 1965.

## Psychology

*Professors* Thelma Hunt, J. L. Finan (*Chairman*), E. L. Phillips, J. N. Mosél, B. I. Levy, W. E. Caldwell, \*R. D. Walk, R. K. White  
*Professorial Lecturers* Margaret Ives, Margaret Mercer, S. J. Kaplan  
*Associate Professors* C. E. Tuthill, Eva Johnson, Virginia Kirkbride, L. E. Schlesinger (*Research*)  
*Associate Professorial Lecturer* R. K. Kahn  
*Assistant Professors* R. R. Bonato (*Research*), R. H. Tanck (*Research*), James Cole, Lois Hammer, D. E. Silber

### CLINICAL TRAINING STAFF

*Clinical Professor* I. W. Scherer

*Associate Clinical Professors* Katharine Beardsley, Elizabeth Broomhead, M. L. Meltzer

*Assistant Clinical Professors* Alice Adams, H. D. Crowley, Andrea Doman, S. B. Kopp, Boleslaus Kurpiewski, N. G. Markwell, J. M. Smothers, Mimi Spielberg

### FIRST GROUP

- 1 **General Psychology** † (3) The Staff  
 Lecture (2 hours), discussion (1 hour). The fundamental principles underlying human behavior. (Fall and spring—day and evening; summer 1965.)
- 5-6 **Principles and Methods of Psychology** † (3-3) Walk and Staff  
 Lecture (2 hours), laboratory (2 hours). An experimental approach to the understanding of behavior. A variety of individual and class experiments are performed. Prerequisite for freshmen: Psychology 1. Required of all psychology majors, who should take the course early in the major. *First half:* awareness, discrimination, sensation, perception, and emotions and their relation to adaptive behavior. *Second half:* topics of motivation, learning, memory, and problem solving. (Academic year—day and evening.)
- 8 **Psychology of Motivation and Personality** (3) The Staff  
 (Formerly Psychology of Adjustment)  
 Processes involved in the total adjustment of the individual with emphasis on social environment; development in the individual of adjustment techniques. (Fall and spring—day and evening; summer 1965.)
- 22 **Introduction to Educational Psychology** (3) Tanck  
 Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training. (Fall—evening; spring—day; summer 1965.)
- 29 **Psychology of Childhood** (3) Johnson  
 A genetic approach to the study of the child. Special emphasis is placed on the socialization process, learning, and the child's view of the world. (Fall—day; spring—evening; summer 1965.)

\* On sabbatical leave fall semester 1965-66.

† Psychology 1 or 5-6 is prerequisite to all other courses in Psychology.



## SECOND GROUP\*

- 101 **Abnormal Psychology (3)** Hunt and Staff  
The causes, diagnosis, treatment, and prevention of the various types of maladjustments and mental disorders. Prerequisite: 6 credits in psychology, or 3 credits in psychology and 6 credits in a biological science. (Fall—day and evening; spring—day; summer 1965.)
- 112 **Psychology of Adolescence (3)** Johnson  
Psychological characteristics and problems peculiar to adolescence, with emphasis on applications of psychology to solution of such problems. (Fall—day.)
- 115 **Psychology of Language and Communication (3)** Mosél  
An introduction to psycho-linguistics and verbal behavior. Information theory, the measurement of meaning, cultural and linguistic structures in the perception and learning of language. (Fall—day.)
- 118 **Physiological Psychology (3)** Finan  
Basic structure and functions of sensory systems, motor systems, central nervous system, autonomic nervous system, and endocrine system with special emphasis upon the relations between physiological functioning and behavior. (Fall—evening; spring—day; summer 1965.)
- 121 **Psychology of Learning (3)** Finan  
Current learning theories and issues. (Fall—day; summer 1965.)
- 129 **Motivational Factors in Personality (3)** Kirkbride  
A survey of basic principles and assessment techniques, with emphasis on applications to counseling. (Fall—day.)
- 131 **Psychological Tests (3)** Hunt  
A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, \$7. (Fall—day; spring—evening; summer 1965.)
- 144 **Personnel and Industrial Psychology (3)** Mosél  
(Formerly Personnel Psychology)  
Psychological concepts and methods applied to problems of personnel management, human engineering, employee motivation, and productivity. (Fall and spring—evening.)
- 151 **Social Psychology (3)** Tuthill, White  
The social foundations of attitudes and behavior: cognition, motivation, role-behavior, communication, small-group processes, racial attitudes, nationalism, and war. (Fall—evening; spring—day; summer 1965.)
- 156 **Psychology of Attitudes and Public Opinion (3)** Tuthill  
(Formerly Psychology of Propaganda and Public Opinion)  
The psychology of opinion formation, the measurement of opinion, the social determinants of attitudes, the psychological processes in propaganda, the bases of receptivity of propaganda, psychological warfare. (1966-67 and alternate years; summer 1965.)

\* Six credits in first-group courses are prerequisite to all second-group courses.

**161 Comparative Psychology (3)**

Caldwell

A lecture course in animal psychology. Covers psychological processes in infrahuman organisms, evolution of behavior, the place of animal experimentation, and research in psychology. (Spring—day.)

**191-92 Independent Research in Psychology (3-3)**  
(Formerly Research Problems in Psychology)

The Staff

Opportunity for work on individual library or experimental projects. Open to qualified students by special permission of the instructor; arrangements must be made with the sponsoring faculty member prior to registration. (Academic year—as arranged.)

**196 History and Systems of Psychology (3)**

Caldwell and Staff

A senior capstone course which includes a survey and integration of the major viewpoints and concepts of psychology. Open to senior majors and, by special permission of the instructor, to other students with 12 or more credits in psychology. (Fall—day; spring—evening; summer 1965.)

**198 Current Research Issues in Psychology (3)**

Walk

Class is conducted as a seminar and will consider recent experiments in psychology, including those performed by members of the class. Emphasis is on student participation. Open only to senior psychology majors. (Spring—day.)

**THIRD GROUP\***

**202 Psychological Research Methods and Procedures (3)**

Required in all graduate programs. Prerequisites: Experimental Psychology and an elementary course in statistics. (Fall—evening; spring—day.)

**203-4 Experimental Foundations of Psychology (3-3)**

The Staff

Required of all graduate students during the first year of graduate study. *First half:* sensory and motor processes, physiological psychology and perception. *Second half:* basic adaptive processes, theoretical issues in learning, motivation, problem solving, and thinking. (*First half:* fall—evening. *Second half:* spring—day.)

**205 Methodological and Theoretical Principles and Issues in Psychology (3)**

Finan

A review and critical appraisal of the basic postulates of psychology as a science. Topics considered will include the role of theory in psychological science, the data-language of psychology, experimental vs. empirical methods of observation, molecular vs. molar approaches, qualitative vs. quantitative approaches, and the problem of inference in the behavioral sciences. (Spring—day.)

**209 Seminar: Psychology of Motivation (3)**

Caldwell

A consideration of various theoretical approaches to the psychology of motivation and systematic concepts and experimental findings deriving from each approach. (1966-67 and alternate years.)

\* Open only to graduate students, except by special permission of Instructor and Chairman of the Department.

- 211 **Assessment of Cognitive Functioning (3)** Levy  
(Replaces Psychology 233 Individual Psychological Testing)  
Instruction and practice in giving of the Binet and Wechsler tests. Prerequisite: an elementary course in tests and measurements. Material fee \$7. (Fall and spring—day.)
- 212 **Personality Assessment by Projective Techniques (3)** Silber  
Primary emphasis upon administration and scoring of the Rorschach Test. Prerequisite: Psychology 211. (Fall—day; spring—evening; summer 1965.)
- 215 **Personality Assessment by Multiple Procedures (3)** Levy  
(Formerly Advanced Study of Projective Techniques)  
Primary emphasis upon interpretation of the Rorschach Test. Prerequisite: Psychology 212. (Fall—evening; spring—day.)
- 217 **Seminar: Developmental Psychology (3)**  
(Not offered 1965–66.)
- 219 **Seminar: Topics in Advanced Clinical Psychology (3)**  
Consideration of selected areas of research and theory in the general field of clinical psychology. The specific topic will be announced in advance of the beginning of the semester. (Spring—evening.)
- 220 **Seminar: Abnormal Psychology (3)** Hunt  
An intensive study of selected problems in the field of abnormal psychology. (Fall—day; spring—evening; summer 1965.)
- 223 **Seminar: Learning (3)** Finan  
Selected topics in the psychology of learning. (Spring—evening.)
- 226 **Seminar: Clinical Psychology of Childhood and Adolescence (3)** Johnson  
A survey of behavior and personality disorders. (Spring—evening.)
- 227–28 **Seminar: Variations in Psychotherapeutic Approach (3–3)** Kahn  
A study of patient needs and demands upon the therapist. Case participation will be heavily relied upon. Open to qualified students in psychology and related fields, with permission of the instructor. (Academic year—day.)
- 229 **Seminar: Principles of Behavior Change (3)** Phillips  
A survey of stimulus-organism-response variables and their interactions, with special emphasis on learning theory as applied to clinical problems. (Spring—day.)
- 231 **Development of Psychometric Instruments (3)** Mosél  
The quantitative techniques and principles used in the construction, standardization, and evaluation of personality and ability measures for both research and practice; the quantification of human judgment for measurement purposes. Prerequisite: a course in tests and measurements and an elementary course in statistics. (1965–66 and alternate years: fall—evening.)
- 234 **Seminar: Theory of Psychological Measurement (3)** Mosél  
(Formerly Seminar: Test Theory)  
Development of the classical axiomatic-deductive theory underlying the



major notions in the construction and evaluation of psychological tests. (1966-67 and alternate years.)

- 245 **Seminar: Organizational Behavior (3)** Mosél  
(Formerly Seminar: Employee Motivation and Morale)  
An analysis of organizational behavior, especially with regard to motivation and productivity. The implications of recent research on employee attitudes, the primary group, the effects of various patterns of supervisory leadership, the role of formal and informal organization, and job design. (Spring—day and evening.)
- 246 **Seminar: Personnel Measurement Techniques (3)** Mosél  
Detailed consideration of the techniques of personnel selection and performance evaluation. The use of employment tests, personal data, assessment interviews, and performance ratings. (1965-66 and alternate years: fall—evening.)
- 247 **Seminar: Topics in Psychotechnology (3)**  
Consideration of selected areas of research and theory in the general field of human performance in world organizations. The specific topic will be announced before the beginning of the semester. Open to qualified students in psychology, engineering, and the social sciences with permission of the instructor. (1965-66 and alternate years: fall and spring—as arranged.)
- 249 **Seminar: Psychological Factors in Design and Operation of Man-Machine Systems (3)** Finan  
Includes consideration of psychotechnology versus theoretical psychology, system methodology, personnel selection and utilization, information displays and controls, training, decision making, stress and vigilance, simulation, and evaluation of system performance. Open to qualified students in psychology and engineering, with permission of the instructor. (Fall—evening.)
- 251 **Seminar: Advanced Social Psychology (3)** Tuthill  
Current research and theory in social psychology: group dynamics, ego-involvements, action research, and social interaction theory. (Fall—evening.)
- 252 **Research Methods in Social Psychology (3)** Tuthill  
The substantive emphasis shifts in alternate years. In 1965-66 examples are drawn from attitude-scale construction (e.g., Thurstone, Likert, and Guttman scales), sampling and analysis of data; in 1966-67, they will be drawn from opinion-survey techniques, the art of interviewing, questionnaire construction, content analysis, and report writing. (Spring—day.)
- 254 **Seminar: Experimental Social Psychology (3)** Tuthill  
(Formerly Seminar: Group Dynamics)  
The experimental study of small groups; autocratic and democratic group climates; interaction process analysis; Lewin's field-theoretical approach to individual and group processes. (1965-66 and alternate years: spring—day.)
- 255 **Seminar: Techniques of Opinion and Attitude Measurements (3)** Tuthill  
Methods of attitude measurement (interviews, questionnaires, scales, polls) as currently used by private and governmental investigators. The place of

attitude studies in schools, industry, government, etc. (1966-67 and alternate years.)

- 256 **Seminar: Psychology of Group Conflict (3)** White  
Consideration of psychological processes common to various forms of group conflict: racial, class, and international. Evidence from animal behavior, child behavior, cultural anthropology, psychiatry, game theory, semantics, and especially from recent history, including the East-West conflict. Theoretical discussion, chiefly in terms of motivation and cognition. (Spring—day.)
- 261 **Seminar: International Communication (3)** Mosé  
The process of communicating information and effecting attitude change across cultures by means of mass media. Special emphasis is given to the role of psychocultural factors and the functions of mass communication in the development of transitional societies. Especially for students in the School of Government, Business, and International Affairs. (1966-67 and alternate years.)
- 269 **Seminar: Topics in Social Psychology (3)**  
Consideration of selected areas of research and theory in the general field of social psychology. The specific topic will be announced prior to the beginning of the semester. Topic for 1965-66—Cross-cultural Psychological Research. (Spring—evening.)
- 272 **Seminar: Theories of Personality (3)** Caldwell  
A survey of the various theories of personality, with emphasis upon theoretical problems and methodology in the field of personality study. (Fall—evening; summer 1965.)
- 283-84 **Practicum in Clinical Psychology (3-3)** Levy, Phillips  
Supervised practical instruction in agencies doing clinical psychological work. Prerequisite: Psychology 212. Admission by permission of the instructor. (Academic year—as arranged; summer 1965.)
- 285-86 **Teaching Practicum in Psychology (1-1)** The Staff  
Supervised training in various aspects of college teaching, including tutorial and small group instruction, lecturing, and examination methods; readings; seminar discussions. Admission by permission of the instructor. May be repeated with progression from elementary to advanced courses. (Academic year—as arranged.)
- 289-90 **Seminar: Current Research and Theory in Experimental Psychology (3-3)**  
A review and discussion of contemporary research and theory in some advanced and specialized field of psychological study, by leaders in the field. The specific topic and instructor for each semester will be announced in advance of the beginning of the semester. (Academic year—evening; summer 1965.)
- 292 **Seminar: Perception (3)** Walk  
Study of current research and theory in the experimental psychology of perception. (1966-67 and alternate years.)
- 293 **Seminar: Psychology of Thinking (3)**  
Thinking and problem solving. Specific topics include: concept formation, the nature of insight, creative thinking, and originality. (Not offered 1965-66.)

- 295-96 **Independent Research in Psychology** (arr.) The Staff  
(Formerly Research in Psychology)

Individual library or experimental research under supervision of staff member. Arrangements must be made with sponsoring faculty member prior to registration. (Academic year—as arranged; summer 1965.)

- 299-300 **Thesis** (3-3) The Staff  
(Academic year—as arranged; summer 1965.)

### **COURSES OFFERED IN COOPERATION WITH OTHER SCHOOLS, COLLEGES, AND DIVISIONS OF THE UNIVERSITY**

In addition to the regular courses announced above the University offers the following courses in conjunction with special programs in schools, colleges, and divisions of the University other than Columbian College of Arts and Sciences.

- 145 **Principles of Human Relations** (3) (School of Grossnickle  
Engineering and Applied Science)

- 259 **Seminar: Social Psychology of Communism** (3) White  
Psychological aspects of authoritarian systems and of all-embracing political ideologies; methods and findings in the study of public opinion in the USSR and its satellites; problems of Western communications with the USSR; the nature of Communist propaganda and the appeals of Communism in non-Communist countries. Especially for students in the Institute for Sino-Soviet Studies. (Fall—evening.)

- 262 **Behavioral Factors in Social Change** (3) Lippitt  
Current research and theory related to the process of social change. Basic principles of planned change will be explored with individual, group, organization, community, and cultural change. Human factors in the change process will be emphasized. Especially for students in the Center for Behavioral Sciences. (Spring—evening.)

## **Religion**

*Professors J. R. Sizoo, R. G. Jones (Chairman)*  
*Associate Professorial Lecturer Damian McElrath*  
*Assistant Professors H. E. Yeide, Jr., D. D. Wallace, Jr.*  
*Assistant Professorial Lecturer E. W. Seaman*

### **FIRST GROUP**

- 9 **The Old Testament** (3) Jones and Staff  
A historical and literary approach to the study of the books of the Old Testament with special consideration given to the development of religious ideas, institutions, and outstanding personalities. (Fall—day and evening.)



- 10 **The New Testament (3)** Jones and Staff  
A study of the literature of the New Testament from the standpoint of occasion, purpose, dominant ideas, and permanent values. Special emphasis on the approach, the structure, and the significance of the Gospels and Epistles. (Spring—day and evening; summer 1965.)
- 59-60 **History of Religions (3-3)** Wallace, Yeide  
*First half:* primitive and ancient national religions: Confucianism, Taoism, Buddhism, Hinduism, and Shintoism—their historical setting, founders, and development of religious thought and culture. *Second half:* Zoroastrianism, Judaism, Christianity, and Islam—analysis of their origin, evolution, and contemporary status. (Academic year—day and evening; summer 1965.)
- SECOND GROUP**
- 103 **The Prophets, Their Times and Their Message (3)** Jones  
The development of prophetism in the Old Testament; cultural, economic, psychological, and religious factors in the movement; elements of lasting value in the prophetic teaching. A few of the prophets will be selected for particular study. (Summer 1965.)
- 104 **The Life and Thought of Jesus (3)** Yeide  
A comprehensive study of the life and teachings of Jesus with critical attention to the sources and special emphasis on the central concepts in the message of Jesus. (Spring—evening.)
- 105 **The Life and Thought of Paul (3)** Yeide  
Greek and Hebrew backgrounds of early Christianity, the Roman world of the first century, religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's teaching and presentation of the Christian faith, the place of the Pauline epistles in the New Testament. (Fall—evening.)
- 121 **Philosophical Problems of Western Religious Thought (3)**  
Survey of selected classical and contemporary religious thinkers with special reference to such problems as: the nature of religious truth and experience; the existence, character, and activity of God; the predicament of man; the problem of evil and suffering; science and religion; religious views of history. (Not offered 1965-66.)
- 122 **Christian Ethics and Modern Society (3)** Yeide  
The nature and principles of the Christian life as developed by the Christian community; problems of personal conduct; the application of the Christian standard to family, social, and economic institutions. (Spring—day; summer 1965.)
- 131 **History of Christianity to the Reformation (3)** Wallace  
The rise and expansion of Christianity, the development of Christian thought, the evolution of church organization and worship, the Renaissance and pre-Reformation dissent. (Fall—day.)
- 132 **History of Modern Christianity (3)** Wallace  
The origin and development of Protestantism; the Roman Catholic revival; the status of the Eastern churches; doctrines, worship, expansion, church and state, and relation to modern thought and life. (Spring—day; summer 1965.)
- 135 **History of Judaism to the Talmud (3)** Seaman  
A study of the history and religious thought of the Jewish people from the Maccabean revolt to the compilation of the Talmud. (Fall—day.)

- 136 **History of Medieval and Modern Judaism** (3) Seaman  
A study of the history and religious thought of the Jewish people from the compilation of the Talmud to the present. (Spring—day.)
- 141-42 **Religious Education** (3-3)  
Principles and practices of religious education in the home, church, and community; basic educational procedures and special techniques; organization and administration of religious education. (Not offered 1965-66.)
- 172 **Religion in American Culture** (3) Wallace  
Growth of religious bodies and institutions in American culture, the heritage of religious freedom and diversity, the development of religious thought, and analysis of the contemporary religious scene. (Spring—day.)
- 199-200 **Proseminar: Readings for the Religion Major** (3-3) Yeide, Jones  
Readings and group discussions. (Academic year—as arranged.)
- THIRD GROUP**
- 209-10 **Seminar: Biblical Literature** (3-3)  
Study of the main problems of Biblical literary and historical criticism. (Not offered 1965-66.)
- 211-12 **Seminar: Biblical Thought** (3-3) Jones  
Study of the Biblical interpretation of history and reality and its relation to Biblical beliefs about God, man, and the world. (Academic year—evening.)
- 222 **Seminar: Christian Ethics** (3) Yeide  
Study of important tendencies in the ethical reflection of the contemporary Christian Church, giving special attention to the contributions of the social sciences to that reflection. (Not offered 1965-66.)
- 231-32 **Seminar: Early and Medieval Christianity** (3-3)  
An advanced study of the development of Christian thought from primitive beginnings to the Reformation. (Not offered 1965-66.)
- 233-34 **Seminar: Reformation and Modern Christianity** (3-3) Yeide, Wallace  
Analysis of developments in Western religious thought from the 16th century to the present. (Academic year—evening.)
- 241-42 **Seminar: Religious Education** (3-3)  
Advanced course dealing with some of the major problems in the practice of religious education. (Not offered 1965-66.)
- 271 **Seminar: American Religious History to 1830** (3) Wallace  
Study of religious thought and life during the Colonial and early national period. (Fall—evening.)
- 273 **Seminar: American Religious History since 1830** (3)  
Analysis of modern and contemporary trends in American religious thought. (Not offered 1965-66.)
- 291-92 **Readings and Research** (3-3) The Staff  
Investigation of special problems in the history of religion. (Academic year—as arranged; summer 1965.)
- 299-300 **Thesis** (3-3) The Staff  
(Academic year—as arranged; summer 1965.)

## RELATED COURSES IN OTHER DEPARTMENTS

Art 115 *Christian Iconography* (3)

Classical Languages and Literatures 11-12 *First-year Greek* (3-3)

Classical Languages and Literatures 13-14 *Second-year Greek* (3-3)

Classical Languages and Literatures 21-22 *First-year Classical Hebrew* (3-3)

Classical Languages and Literatures 23-24 *Second-year Classical Hebrew* (3-3)

Sociology 125 *Sociology of Religion* (3)

## Romance Languages and Literatures

*Professors* G. E. McSpadden, L. A. Vigneras, Rafael Supervía, W. G. Clubb (*Chairman*)

*Associate Professors* J. W. Robb, G. E. Mazzeo, J. A. Frey, J. L. Metivier, Jr., James Burks, Fred Abrams

*Assistant Professors* Elizabeth Neyman, R. M. Riggs, G. P. Huvé

*Assistant Professorial Lecturer* Esther Lawton

*Instructors* Eulogia Llansa, Ruth Weinreb, Elizabeth Burkley, Cecilia Uribe, Anne Cordero, Julia Hicks, Dorothy Betz, Diana Bronte

*Language Workshop Supervisor* W. H. Ausman

Courses are generally conducted in the language concerned. For General Courses in Romance Languages and Literatures (French, Italian, Portuguese, Spanish), see pages 188-89.

## FRENCH

### FIRST GROUP

#### 1-2 **First-year French** (3-3) The Staff

A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern French prose. Aural training, oral practice in electronic language workshop. Workshop fee, \$6 a semester. (*First half:* fall and spring—day and evening; summer 1965. *Second half:* fall and spring—day and evening; summer 1965.)

#### 2x **First-year French** (3) Riggs and Staff

An intensive course to which are assigned entering students with one or more years of high school French whose placement tests show them inadequately prepared for the regular work of French 3. The course meets six hours a week (3 hours of lecture, 2 hours of drill, and 1 hour of workshop) and carries 3 semester hours of credit. The total fee is \$163 (the tuition fee of \$138 plus an additional fee of \$25) plus workshop fee, \$6. (Fall and spring—day.)

#### 3-4 **Second-year French** \* (3-3) The Staff

A year course: credit is not given for the first half until the second half is completed. Conversation, grammar, composition, reading in modern French

\* French 3-4 or 6 is required, and French 51 52 is recommended, as prerequisite to all second-group courses



prose, introduction to French civilization. Aural training, oral practice in electronic language workshop. Workshop fee, \$6 a semester. Prerequisite: French 1-2, 2x, or two years of high school French. (*First half: fall and spring—day and evening; summer 1965. Second half: fall—day; spring—day and evening; summer 1965.*)

**6 Second-year French \* (6)**

The Staff

Lecture (3 hours), discussion (3 hours). An intensive, accelerated course which covers the material of French 3-4. Grammar review, reading, conversation. Prerequisite: two years of high school French or a grade of B or better in French 2 or 2x. (Fall and spring—day.)

**9-10 French Conversation and Composition (3-3)**

The Staff

Prerequisite: French 4 or the equivalent and permission of the instructor. (Academic year—day and evening; summer 1965.)

**49 French Readings for Nonmajor Students (3)**

Lawton and Staff

Primarily for graduate students preparing for reading examinations. Undergraduates admitted only with specific permission of the instructor. No academic credit for graduate students. (Fall and spring—evening; summer 1965.)

**51-52 Survey of French Literature and Civilization \* (3-3)**

Metivier

The social, artistic, and cultural background of French civilization. Lectures, readings, recitations, and informal discussions. (Academic year—day and evening; summer 1965.)

**SECOND GROUP\***

**103 Problems of Pronunciation and Intonation (3)**

Vigneras

Recommended for majors and required for a Bachelor of Arts in Education degree with a teaching field in French. (Fall—day.)

**109-10 Advanced French Conversation and Composition (3-3)**

Vigneras

Normally diction will receive greater emphasis in the fall semester and style in the spring semester. Prerequisite: French 10 or the equivalent and permission of the instructor. (Academic year—day; summer 1965.)

**119-20 French Literature of the 16th Century (3-3)**

Metivier

Prose, poetry, drama, and memoirs of the French Renaissance; Rabelais, Montaigne, Marot, La Pléiade, etc. Class analysis of texts, collateral reading. (1965-66 and alternate years: academic year—day.)

**121-22 French Literature of the 17th Century (3-3)**

Riggs

History, philosophy, criticism, memoirs, letters, eloquence, drama, fiction, poetry. Class analysis of texts; collateral readings. (1966-67 and alternate years.)

**123-24 French Literature of the 18th Century (3-3)**

History, philosophy, criticism, letters, drama, fiction, poetry, the "salons", the idea of progress, the idea of science. Class analysis of texts, collateral reading, lectures on literature and history. (1965-66 and alternate years: academic year—evening.)

**125-26 French Literature of the 19th Century (3-3)**

Frey

Romanticism and realism: fiction, poetry, drama, criticism. Class analysis

\* French 3-4 or 6 is required, and French 51-52 is recommended, as prerequisite to all second-group courses.

of texts, collateral reading, lectures on literature and history. (1966-67 and alternate years.)

- 127-28 **French Literature of the 20th Century (3-3)** Clubb  
Fiction, poetry, drama, criticism. Class analysis of texts, collateral reading, lectures on literature and history. (1965-66 and alternate years: academic year—evening.)
- 129-30 **Contemporary French Literature (3-3)** Clubb  
Existentialism and surrealism in the novel, poetry, and drama from 1918 to the present. Lectures, discussions, and reports. (Summer 1965—French 129 (3).)
- 199-200 **Proseminar: Readings for the Major in French Language and Literature (3-3)** Burks  
Conferences and group discussions. (Academic year—as arranged.)

### THIRD GROUP

- 202 **History and Methods of Literary Analysis and Criticism (3)** Frey  
Literary criticism from Aristotle to the New Critics. Methods to be demonstrated and applied to selected passages from French literature. Emphasis on technique known as *explication de texte*. (Offered 1966-67.)
- 212 **Historical French Grammar (3)** Vigneras  
The phonology, morphology, and syntax of Old French, and its development from Vulgar Latin. Practical exercises based on texts. Prerequisite: a second-group course in French literature, Romance 279 *Introduction to Romance Philology and Linguistics* (see General Romance Courses), and an elementary knowledge of Latin. (Offered 1966-67.)
- 213-14 **Old French (3-3)** Vigneras  
French literature to the end of the Middle Ages. Prerequisite: a second-group course in French literature and the permission of the instructor. (Academic year—day.)
- 224 **Seminar: the Age of Rabelais (3)** Burks  
Humanism and the Reformation in French letters. Rabelais and the *conteurs*. Poetry to the Pléiade. Research projects, papers, reports. (Fall—day.)
- 225 **Seminar: the Age of Montaigne (3)** Burks  
Montaigne: the man and the development of his thought. Poetry from the Pléiade to Malherbe. Drama. Research projects, papers, reports. (Spring—day.)
- 227 **Seminar: the Renaissance in Europe (3)** Burks  
The sources and nature of literary trends in Western Europe from Dante to Calderón, and their relationship to French literature. Readings, papers, and discussion. (1966-67 and alternate years.)
- 231-32 **Theater in the 17th Century (3-3)** Clubb  
A survey of the development of theatrical arts and the drama. Research papers and reports. Prerequisite: French 121-22 or the equivalent. (1966-67 and alternate years.)
- 234 **Nondramatic Literature of the 17th Century (3)** Clubb  
Rationalism and the revolt against authority expressed in literature. Development of classical doctrine. Discussion of texts and collateral readings. (Spring—day.)

- 241 **The Rationalistic Current in the 18th Century** (3)  
 Bayle, Fontenelle, Montesquieu, Voltaire, Rousseau, as philosophers, dramatists, and critics of their age; their contributions to the intellectual evolution of France and Europe. (Fall—day.)
- 242 **Seminar: the French Novel in the 18th Century** (3)  
 Development of the novel in France from *La Princesse de Clèves* to the French Revolution; themes and techniques. (Offered 1966–67.)
- 244 **Seminar: Diderot and the Encyclopedia** (3)  
 Diderot's contribution to 18th century novel, drama, and aesthetic criticism; the Encyclopedia as embodiment of 18th century thinking. (Spring—day.)
- 250 **Romanticism in France** (3) Frey  
 The theory and practice of romanticism in France: romantic love, the Napoleonic myth, exoticism, local color, sensationalism, and religiosity as reflected in new styles of prose and poetry. Romantic criticism. The preparation for realism. (Offered 1966–67.)
- 251 **Naturalism** (3) Frey  
 Development of theory and style; influence of history, science, philosophy, and art on literary naturalism. Naturalistic criticism. (Spring—day.)
- 252 **Flaubert and French Realism** (3) Frey  
 Prose style in the novel from Balzac to Flaubert with emphasis on the latter; literary doctrines of realism and its stylistic techniques; the works of Balzac, Stendhal, Mérimée, Gautier, Flaubert, and selected correspondence. (Offered 1966–67.)
- 253 **Seminar: Symbolism in Poetry** (3) Clubb  
 The origin and nature of symbolism from Mallarmé to Valéry. Class analysis of texts and reports. Prerequisite: French 127–28 or the equivalent. (Offered 1966–67.)
- 254 **Seminar: Victor Hugo** (3) Frey  
 Hugo and the development of the romantic ideal in prose and poetry; Hugo and romantic theater and criticism. Analysis, classification, and criticism of romantic themes and techniques in the works of Hugo; contemporary Hugo criticism. (Offered 1966–67.)
- 255 **Seminar: Stendhal and Le Beylisme** (3) Frey  
 Stendhal's novels and autobiographical works. Stendhal and Italy. Readings, discussions, and papers. (Fall—day.)
- 256 **Nineteenth Century French Literature** (3)  
 Poetry, prose, and drama, 1830–1900. Development of literary styles. Class discussions and reports. (Summer 1965.)
- 264 **Seminar: Modern Period** (3) Clubb  
 Poetry, prose, drama. (Offered 1966–67.)
- 299–300 **Thesis** (3–3) The Staff  
 (Academic year—as arranged; summer 1965.)



## ITALIAN

### FIRST GROUP

**1-2 First-year Italian (3-3) The Staff**

A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern Italian prose. Aural training, oral practice in electronic language workshop. Workshop fee, \$6 a semester. (Academic year—day and evening; summer 1965.)

**3-4 Second-year Italian (3-3) The Staff**

A year course: credit is not given for the first half until the second half is completed. Conversation, grammar, composition, reading in modern Italian prose, introduction to Italian civilization. Aural training, oral practice in electronic language workshop. Workshop fee, \$6 a semester. Prerequisite: Italian 1-2 or two years of high school Italian. (Academic year—day.)

## SPANISH

### FIRST GROUP

**1-2 First-year Spanish (3-3) The Staff**

A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern Spanish prose. Aural training, oral practice in electronic language workshop. Workshop fee, \$6 a semester. (*First half*: fall and spring—day and evening; summer 1965. *Second half*: fall and spring—day and evening; summer 1965.)

**2x First-year Spanish (3) Neyman and Staff**

An intensive course to which are assigned entering students with one or more years of high school Spanish whose placement tests show them inadequately prepared for the regular work of Spanish 3. The course meets six hours a week (3 hours of lecture, 2 hours of drill, and 1 hour of workshop) and carries 3 semester hours of credit. The total fee is \$163 (the tuition fee of \$138 plus an additional fee of \$25) plus workshop fee, \$6. (Fall and spring—day.)

**3-4 Second-year Spanish \* (3-3) The Staff**

A year course: credit is not given for the first half until the second half is completed. Conversation, grammar, composition, reading of modern Spanish prose, introduction to Hispanic civilization. Aural training, oral practice in electronic language workshop. Workshop fee, \$6 a semester. Prerequisite: Spanish 1-2, 2x, or two years of high school Spanish. (*First half*: fall and spring—day and evening; summer 1965. *Second half*: fall—day; spring—day and evening; summer 1965.)

**6 Second-year Spanish \* (6) The Staff**

Lecture (3 hours), discussion (3 hours). An intensive, accelerated course which covers the material of Spanish 3-4. Grammar review, reading, conversation. Prerequisite: two years of high school Spanish or a grade of B or better in Spanish 2 or 2x. (Fall and spring—day.)

**9-10 Spanish Conversation and Composition (3-3) The Staff**

Prerequisite: Spanish 4 or the equivalent and permission of the instructor. (Academic year—day and evening; summer 1965.)

**49 Spanish Readings for Nonmajor Students (3) The Staff**

Primarily for graduate students preparing for reading examinations. Under-

\* Spanish 3-4 or 6 is required, and Spanish 51-52 is recommended, as prerequisite to all second-group courses in Spanish.

graduates admitted only with specific permission of the instructor. No academic credit for graduate students. (Fall and spring—evening.)

- 51-52 **Survey of Spanish Literature and Civilization \*** (3-3) **Supervía**  
The social, artistic, and cultural background of Spanish civilization. Lectures, readings, recitations, and informal discussion. (Academic year—day and evening; summer 1965.)

## SECOND GROUP\*

- 103 **Problems of Pronunciation and Intonation** (3) **McSpadden**  
Descriptive and practical review of Spanish sounds and inflections. Remedial exercises. Recommended for majors and required for the Bachelor of Arts in Education degree with a teaching field in Spanish. (Fall—day; summer 1965.)
- 109-10 **Advanced Spanish Conversation and Composition** (3-3) **Mazzeo**  
Normally diction will receive greater emphasis in the fall semester and style in the spring semester. Prerequisite: Spanish 10 or the equivalent and permission of the instructor. (Academic year—day; summer 1965.)
- 121-22 **Spanish Literature of the Golden Age** (3-3) **Abrams**  
Lope de Vega, Calderón; the classic drama, the ballad, lyric poetry, prose. Class analysis of texts, collateral reading, lectures on literature and history. (1965-66 and alternate years: academic year—evening.)
- 123-24 **Cervantes: Don Quijote** (3-3) **McSpadden**  
Life and works of Cervantes: the *Quijote* and its relationship to other works of the Golden Age. Lectures, discussions, and reports. (1966-67 and alternate years.)
- 125-26 **Modern Spanish Literature** (3-3) **Mazzeo**  
Prose and poetry of the 18th and 19th centuries. Class analysis of texts, collateral reading, lectures on literature and history. (1966-67 and alternate years.)
- 127-28 **Contemporary Spanish Literature** (3-3) **Supervía**  
Prose and poetry of the 20th century. Class analysis of texts, collateral reading, lectures on literature and history. (Academic year—day.)
- 129 **The Romantic Drama in Spain** (3) **Mazzeo**  
Class analysis of texts, collateral reading, and lectures on the Spanish Romantic Drama. (Summer 1966 and alternate summers.)
- 151-52 **The Spanish-American Novel** (3-3) **Robb**  
Development of the novel in Spanish America. Lectures, collateral reading, and class analysis of texts. (Academic year—evening.)
- 155-56 **Spanish-American Literature to 1880** (3-3) **Robb**  
The literature of Spanish America from the colonial period to the latter part of the 19th century. Lectures, collateral reading, reports, and class analysis of important works. (1966-67 and every third year; summer 1965—Spanish 155 (3).)
- 157-58 **Spanish-American Literature since 1880** (3-3) **Robb**  
The literature of Spanish America from 1880 to the contemporary period. Lectures, collateral reading, reports, and class analysis of important works. (1967-68 and every third year.)

\* Spanish 3-4 or 6 is required, and Spanish 51-52 is recommended, as prerequisite to all second-group courses in Spanish.

- 197-98 **Proseminar: Readings for the Major in Spanish-American Literature (3-3)** Robb  
Required of all majors. Conferences and group discussions. (Academic year—as arranged.)
- 199-200 **Proseminar: Readings for the Major in Spanish Language and Literature (3-3)** Abrams, Mazzeo  
Required of all majors. Conferences and group discussions. (Academic year—as arranged.)

### THIRD GROUP

- 202 **Explicación de textos (3)** Robb  
An analytical introduction to the study of Spanish and Spanish-American literature. The method will be demonstrated and practiced on selected passages. (Offered 1966-67.)
- 212 **Historical Spanish Grammar (3)** McSpadden  
Study of phonology, morphology, syntax, and lexicology of Old Spanish, including its development from Vulgar Latin. Practical exercises based on texts. Prerequisite: a second-group course in Spanish literature, Romance 279 *Introduction to Romance Philology and Linguistics* (see General Romance Courses), and an elementary knowledge of Latin. (Spring—day.)
- 214 **Old Spanish (3)** McSpadden  
Literature and language: *El poema de Mío Cid*, *El Conde Lucanor*, *El Libro de Buen Amor*, etc. Prerequisite: a second-group course in Spanish literature, Romance 279 *Introduction to Romance Philology and Linguistics* (see General Romance Courses), and an elementary knowledge of Latin. (Offered 1966-67.)
- 221 **Seminar: Works of Cervantes (3)** McSpadden  
Problems of composition, interpretation, criticism, literary history, and aesthetics. (Offered 1966-67.)
- 223 **Seminar: Drama of the Golden Age (3)** Abrams  
A study of the Spanish theater from its beginnings to Calderón. Reading and analysis of representative works of Lope, Tirso, Alarcón, Calderón, and the pre-Lopistas. (Offered 1966-67.)
- 224 **Seminar: the Renaissance in Spain (3)** Abrams  
Historical and literary aspects of 16th-century Spain. Emphasis on important prose works, mysticism, and lyric poetry. (Offered 1966-67; summer 1965.)
- 226 **Seminar: the Novel in the Golden Age (3)** Abrams  
Various manifestations of the novel: chivalric, pastoral, Byzantine, with main emphasis on the picaresque. (Spring—day.)
- 231 **Seminar: Spanish Writers of the 18th Century (3)** Mazzeo  
Lectures and analysis of principal authors and works; relationships with subsequent literary movements. (Fall—day.)
- 242 **Seminar: Spanish Romanticism (3)** Mazzeo  
Lectures and analysis of principal authors and works. Collateral readings. Problems of origins and developments. (Spring—day.)
- 244 **Seminar: Naturalism and the Spanish Novel (3)** Mazzeo  
The development of Naturalism in 19th century Spain. Analysis of repre-



sentative works of Pardo Bazán, Clarín, Blasco-Ibáñez, and others. (Offered 1966-67.)

- 245-46 **Seminar: Works of Galdós (3-3)** Supervía  
Ideological and stylistic analysis; relationship of his works to the literary movements of the second half of the 19th century. (Offered 1966-67.)
- 251 **Seminar: Works of Unamuno and Ortega y Gasset (3)** Supervía  
A study of their thought; analysis and commentary on the texts. (Fall—day.)
- 253 **Seminar: Modern and Contemporary Spanish-American Poets (3)** Robb  
Genesis and development of the Modernista Movement in Hispanic-America and Spain. Selected Post-Modernists. (Offered 1966-67.)
- 261 **Seminar: Spanish-American Essayists (3)** Robb  
The Spanish-American essay as an artistic form, studied in selected modern essayists such as Rodó, Ricardo Rojas, Vasconcelos, and Arciniegas. (Fall—day.)
- 264 **Seminar: Recent Trends in Spanish-American Fiction (3)** Robb  
Contemporary *cuentistas* and novelists: J. L. Borges, J. J. Arreola, A. Yáñez, C. Fuentes, E. Godoy, and A. Carpentier. (Offered 1966-67.)
- 266 **Seminar: Alfonso Reyes (3)** Robb  
Alfonso Reyes the essayist-artist, poet, and complete humanist as studied in his various prose and poetic works. (Spring—day.)
- 299-300 **Thesis (3-3)** The Staff  
(Academic year—as arranged; summer 1965—Spanish 299 (3).)

#### GENERAL COURSES IN ROMANCE LANGUAGES AND LITERATURES

- 270 **Experimental Phonetics (3)** McSpadden  
History; problems and methods of analysis in the physiological and acoustical branches of phonetics and intonation, their relationships, their application to the Romance languages, and oral aspects of the Romance literatures. (Spring—day.)
- 275-76 **Comparative Romance Languages and Literatures III-IV** Robb  
(Portuguese) (3-3)  
For candidates for the degree of Doctor of Philosophy. Lectures, discussions, exercises, and readings. (Offered 1966-67.)
- 277-78 **Comparative Romance Languages and Literatures V-VI** Robb  
(Portuguese) (3-3)  
For candidates for the degree of Doctor of Philosophy. Portuguese and Brazilian literatures from Camões to the 20th century. (Academic year—day.)
- 279 **Introduction to Romance Philology and Linguistics (3)** McSpadden  
Study of principles found in the development of the Romance languages and methods of analysis at the present time. A general course for graduate students in the fields of the Romance languages and literatures. Prerequisite: an elementary knowledge of Latin. This course is normally followed by French 212 or Spanish 212. (Fall—day.)

283 **Problems of Teaching Romance Languages and Literatures in College (3)**

McSpadden

For candidates for the degree of Doctor of Philosophy. Principles and problems of learning and teaching the language and literature. Apprenticeship in college classes and the language laboratory. (Not offered 1965-66.)

## **Secretarial Studies**

*Assistant Professor Margaret Kiley (Director)*

*Associate Professorial Lecturers Amil Jackowski, W. R. Throckmorton*

*Assistant Professorial Lecturers Exa Tabor, Dorothy Brewer*

*Instructors (part-time) Mary Mott, Pearl Mudre*

- 1 **Elementary Typewriting (3)** Tabor, Throckmorton  
Fundamental techniques of typewriting, basic styles of business letters, introduction to tabulation, and preparation of general office forms. Laboratory fee, \$7. (Fall and spring—day and evening.)
- 2 **Intermediate Typewriting (3)** Tabor, Throckmorton  
The business letter and its arrangement, advanced tabulation, manuscript typing, office forms, stencil cutting, and legal documents. Prerequisite: Secretarial Studies 1 or the equivalent; ability to type accurately at 30 words a minute. Laboratory fee, \$7. (Fall and spring—day and evening.)
- 10 **Notehand (No academic credit)** Tabor  
A personal-use shorthand with integrated instruction in the processes and procedures for taking notes from listening and from reading. Fee, \$40. (Fall—day.)
- 11 **Elementary Shorthand and Transcription (3)** Kiley, Throckmorton  
A study of the principles of Gregg shorthand correlated with dictation and transcription. Minimum shorthand speed of 60 words a minute attained. Laboratory fee, \$3. (Fall and spring—day and evening.)
- 12 **Intermediate Shorthand and Transcription (3)** Kiley, Throckmorton  
Review of the principles of Gregg shorthand. Dictation and transcription on general and specialized business subjects. Minimum shorthand speed of 80 words a minute attained. Prerequisite: Secretarial Studies 11 or the equivalent; ability to take dictation at 60 words a minute. Laboratory fee, \$5. (Fall and spring—day and evening.)
- 13 **Medical Shorthand, Typewriting, and Transcription (3)** The Staff  
Dictation and transcription of specially chosen material selected from case histories, medical correspondence, and hospital records. Experience in the use of dictation machines in transcription. Prerequisite: Secretarial Studies 12 or the equivalent; ability to take dictation at 80 words a minute. Laboratory fee, \$5. (Fall and spring—day and evening.)
- 15 **Advanced Shorthand, Typewriting, and Transcription (3)** Kiley  
Dictation and transcription involving vocabularies in specific businesses. Minimum shorthand speed of 100 words a minute attained. Prerequisite:

Secretarial Studies 12 or the equivalent; ability to take dictation at 80 words a minute. Laboratory fee, \$5. (Fall and spring—day and evening.)

- 16 **Secretarial Shorthand, Typewriting, and Transcription** (3) The Staff  
Dictation and transcription involving vocabularies used in business, government, and the professions. *Minimum* shorthand speed of 120 words a minute attained. Prerequisite: Secretarial Studies 15 or the equivalent; ability to take dictation at 100 words a minute. Laboratory fee, \$5. (Spring—day and evening.)
- 17 **Introduction to Legal Terminology and Law** (3) The Staff  
An introduction to American law, its sources and divisions; the setup of the courts; court procedures; law theory and practice. A study of vocabulary peculiar to the law. (Fall—day and evening.)
- 18 **Legal Shorthand, Typewriting, and Transcription** (3) The Staff  
Dictation and transcription of material with a wide variety of legal vocabulary. Experience in preparation of legal documents and use of legal forms. *Minimum* shorthand speed of 120 words a minute attained. Prerequisite: Secretarial Studies 15 or the equivalent; ability to take dictation at 100 words a minute. Laboratory fee, \$5. (Spring—day and evening.)
- 19-20 **Introduction to Medical Terminology and Medicine** (3-3) Mott  
A basic study of the complexity of the medical language is undertaken through analysis of the word elements. Diseases and injuries are explored with strong emphasis on terminology, symptomatology, and etiology. A study of medical facilities and their interrelationship is included. (Academic year—day and evening.)
- 22 **Medical Secretarial Internship** (4)  
(To be arranged.)
- 51 **Correspondence and Communication** (3) Tabor  
Development of effective correspondence and communication through letter writing and business reports. Study of the influence of human relations on communication media. Analysis of current business literature. (Fall—day and evening.)
- 54 **Secretarial Practice** (3) Tabor  
A thorough study of secretarial responsibilities, problems, and procedures. Experience in the use of secretarial equipment, filing systems, and office management. The development of secretarial personality, office relationships, and professional ethics. (Spring—day and evening.)

## Sino-Soviet Studies

See "Institute for Sino-Soviet Studies"



## Slavic and Oriental Languages and Literatures

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*Associate Professor Helen Yakobson (Chairman)*

*Associate Professorial Lecturer J. C. Wang*

*Assistant Professors G. A. Olkhovsky, Nadine Popluiko, Victoria Sandor, Beverly Fincher, H. T. Lu*

*Assistant Professorial Lecturers Kiril Jaszenko, M. I. Filipovitch-Nikatch, J. R. Child*

*Instructor A. A. Schultz*

### CHINESE (MANDARIN)

#### FIRST GROUP

**1-2 First-year Chinese (3-3) Wang**

A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, reading, writing basic Chinese characters. Aural training, oral practice in electronic language workshop. Workshop fee, \$6 a semester. (Academic year—evening; summer 1965.)

**3-4 Second-year Chinese (3-3) Wang**

A year course: credit is not given for the first half until the second half is completed. Continuation of grammar and spoken Chinese, more emphasis on the written language, reading, writing commonly used Chinese characters, reading selected writings. Aural training, oral practice in electronic language workshop. Workshop fee, \$6 a semester. Prerequisite: Chinese 1-2 or the equivalent. (First half: fall and spring—evening. Second half: spring—evening.)

**5-6 Intensive First-year Chinese (6-6) Fincher**

Classroom (6 hours), tutorial (4 hours), workshop (1 hour). A beginners' intensified course. Pronunciation, recitation, and conversation exercises. Grammatical rules will be provided to enable the student to create and understand new sentences. Listening comprehension and oral practice in electronic language workshop. Workshop fee, \$6 a semester. (First half: fall and spring—day. Second half: fall and spring—day.)

**7-8 Intensive Second-year Chinese (6-6) Lu**

Classroom (6 hours), tutorial (4 hours), workshop (1 hour). An intermediate intensified course. Pronunciation, recitation, and conversation practice. Workshop fee, \$6 a semester. (Academic year—day.)

#### SECOND GROUP

**107-8 Chinese Reading and Conversation (6-6) Lu**

Classroom (6 hours), tutorial (4 hours). Reading of modern Chinese prose (colloquial style). Conversation and composition exercises. Grammatical rules will be reviewed to build up the students' competence in using the language. (Academic year—day.)

**125 Chinese Linguistic Structure (3) Fincher**

Descriptions and explanations of grammatical relations and transformations of Mandarin Chinese. (Fall—day.)

## SLAVIC

### FIRST GROUP

- 1-2 **First-year Russian (3-3)** Yakobson and Staff  
A year course: credit is not given for the first half until the second half is completed. A beginners' course in fundamentals of grammar and pronunciation with graded reading, oral drill, and written practice. Listening comprehension and oral practice in electronic language workshop. Workshop fee, \$6 a semester. (*First half:* fall and spring—day and evening; summer 1965. *Second half:* fall and spring—day and evening; summer 1965.)
- 3-4 **Second-year Russian (3-3)** Yakobson and Staff  
A year course: credit is not given for the first half until the second half is completed. Systematic review of grammar. Study of special problems of Russian morphology and syntax. Oral and written reports on assigned topics. Workshop fee, \$6 a semester. Prerequisite: Russian 1-2 or two years of high school Russian. (*First half:* fall—day and evening; spring—evening. *Second half:* fall—evening; spring—day and evening.)
- 5 **First-year Russian (6)** Olkhovsky  
Classroom (6 hours), workshop (2 hours). An accelerated beginners' course in fundamentals of grammar and pronunciation with graded reading, oral drill, and written practice. Listening comprehension and oral practice in electronic language workshop. Equivalent in coverage to Russian 1-2. Workshop fee, \$12. (Fall—day.)
- 6 **Second-year Russian (6)** Olkhovsky  
Classroom (6 hours), workshop (2 hours). An accelerated course. Systematic review of grammar. Study of special problems of Russian morphology and syntax. Oral and written reports on assigned topics. Equivalent in coverage to Russian 3-4. Workshop fee, \$12. (Spring—day.)
- 9-10 **Russian Conversation and Composition (3-3)** The Staff  
Listening comprehension; oral and written practice. Prerequisite: Russian 3-4 or 6, or permission of the instructor. Workshop fee, \$6 a semester. (Academic year—day.)
- 47 **Beginning Russian for Reading Examination Candidates (0)** The Staff  
For graduate students with little or no knowledge of Russian who intend to use the language as a research tool. No academic credit. Tuition fee, \$138. (Fall—evening; summer 1965.)
- 49 **Russian Readings for Nonmajor Students (3)** The Staff  
Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students. Prerequisite: Russian 4, 6, or 47, or the equivalent. (Spring—evening; summer 1965.)
- 91-92 **Introduction to Russian Literature (3-3)** Popluiko  
A survey of Russian literature, in translation, from the earliest periods through the literary masterpieces of the 19th and early 20th centuries. Lecture, recitation, and discussion—in English. (Academic year—day.)
- 93-94 **Introduction to Slavic (non-Russian) Literature (3-3)** Filipovitch-Nikatch  
A survey of non-Russian Slavic literatures, in translation, from the early periods to the present, with emphasis on the contemporary scene. Lecture, recitation, and discussion—in English. (Academic year—evening.)

## SECOND GROUP

- 101-2 **Readings in Modern Russian (3-3)** Yakobson and Staff  
Representative reading and translation of Soviet periodicals and selected texts in social sciences. Study of current political terminology, abbreviations, and Soviet idiom. (Academic year—day; summer 1965.)
- 103-4 **Scientific Russian (3-3)** The Staff  
Readings in the major fields of Russian contemporary scientific literature. (1966-67 and alternate years.)
- 109-10 **Advanced Russian Conversation and Composition (3-3)** The Staff  
Developing proficiency in oral and written expression. Prerequisite: Russian 10 or the equivalent. (Academic year—evening.)
- 125 **Russian Linguistic Structure (3)** Child  
Descriptive treatment of phonology, morphology, and syntax of contemporary Russian—in English. (Fall—evening.)
- 126 **Comparative Russian-English Linguistic Structure (3)** Child  
Contrastive treatment of Russian and English phonology, morphology, and syntax, with emphasis on pedagogical applications—in English. (Spring—evening.)
- 128 **Dostoevsky, the Man and the Artist (3)** Popluiko  
The sources and the development of his philosophical, religious, and aesthetic ideas. His influence on Russian and Western literature. Lectures, discussions, and reports—in English. (Spring—evening.)
- 141-42 **Russian Literature of the 19th Century (3-3)** Popluiko  
Lectures, special reports, class analysis of selected works of 19th century Russian literature—in Russian. (1966-67 and alternate years.)
- 151-52 **Russian Literature of the 20th Century (3-3)** Popluiko  
Lectures, special reports, class analysis of selected works of 20th century Russian literature—in Russian. (1965-66 and alternate years: academic year—day.)
- 161-62 **Russian Culture (3-3)** Olkhovsky  
A survey of Russian cultural heritage from the origins of ancient Russia to the present—in English. Lecture, recitation, discussion, and individual reports on assigned topics. (Academic year—evening.)
- 165 **Soviet Literature (3)** Popluiko  
A survey of major literary figures, literary movements, and literary styles in translation. Revolution and its impact on literature and on writers. The revival of the psychological novel; short story; contemporary poetry—in English. (Fall—evening.)
- 179-80 **Advanced Russian for Undergraduate Majors (1-1)** Yakobson  
(Academic year—as arranged.)



## Sociology

Professors R. W. Stephens (*Acting Chairman*), I. H. Cisin

Professorial Lecturer C. L. Perian

Associate Professors R. G. Brown, Joseph Monane

Associate Professorial Lecturer Cynthia Nathan

### FIRST GROUP

1-2 **Introductory Sociology** \* (3-3)  
(Formerly Sociology 2)

Development of culture and personality, the impact of groups and institutions on man's social behavior. A survey of the fields within sociology. (Academic year—day and evening; summer 1965—offered as Sociology 2 *Man, Culture, and Society II* (3).)

41 **American Social Problems** (3)

Analysis of major social problems confronting the United States. Factors producing social problems, their nature and treatment. (Fall—day; summer 1965.)

47 **The Sociology of Work** (3)

Brown

Introductory survey of industrial sociology; the sociology of occupations and professions; industry-community relations; and the analysis of large, complex organizations. (1965-66 and alternate years: fall—day.)

### SECOND GROUP

120 **Aging in Modern Society** (3)

Nathan

Aging as a biological and sociological phenomenon; development of old age as a social problem with special emphasis on economic dependency and employment; the social role of the aged. (1966-67 and alternate years.)

123 **Fields of Social Work** (3)

Nathan

Introduction to the nature and scope of social work; the development of social work program; functions of social case work, social group work, and social action. (1965-66 and alternate years: fall—evening.)

124 **Medical Sociology** (3)

Brown

Sociological factors and processes which relate to physical and mental health and disease; analysis of patterned social relationships in the field of health and medicine; the hospital as a social system. (1965-66 and alternate years: spring—day.)

125 **Sociology of Religion** (3)

Yeide

Introduction to the history of the discipline; analysis of the reciprocal impact of secular upon religious and religious upon secular institutions, with special attention to the contemporary American situation. (1965-66 and alternate years: fall—day.)

126 **Urban Sociology** (3)

The place of the city in the larger society; growth of the city, problems of urban living, group life, personality, urban housing, and city planning. Includes consideration of suburban development. (1965-66 and alternate years: spring—day.)

\* Sociology 1-2 is prerequisite to all other courses in Sociology.

- 127 **Population Problems (3)**  
(Formerly Sociology 241)  
Composition of populations, trends in population growth and population pressure, factors producing population movements, effects of migration, population policies: eugenics and birth control. (1966-67 and alternate years; summer 1965.)
- 129 **Race and Minority Groups (3)** Stephens  
Analysis of the relationships between dominant and minority groups in society, particularly in the United States; nature and range of problems; analysis of the phenomenon of prejudice. (1965-66 and alternate years: fall-day.)
- 130 **Social Stratification: Class and Status (3)** Stephens  
(Formerly Anthropology 161)  
Nature of class structure patterns of status, prestige relations in American society, differential class behavior, analysis of comparative social structure and social mobility. (1966-67 and alternate years.)
- 131 **Social Institutions (3)**  
Functional analysis of basic social institutions: family, education, religion, economy, and state in the structure of American Society. (1966-67 and alternate years.)
- 132 **Courtship and Marriage (3)**  
Dating and courtship as social processes, reasons for marriage, marriage laws, mate selection, factors in marital adjustment; prediction and counseling. (1965-66 and alternate years: spring-evening; summer 1965.)
- 133 **The Family (3)** Stephens  
Historical development of the family as a social institution, parent-child relations, family problems, disorganization and divorce, and family reorganization. (1966-67 and alternate years.)
- 135 **Juvenile Delinquency (3)** Perian  
Factors producing delinquency, juvenile detention, the juvenile court, training schools, treatment of offenders. (1965-66 and alternate years: fall-day; summer 1965.)
- 136 **Criminology (3)** Perian  
Nature and distribution of crime, police and court systems, prisons and reformatories; treatment and prevention of crime. (1965-66 and alternate years: spring-day; summer 1965.)
- 138 **Social Disorganization (3)** Cisin  
Analysis of factors contributing to disruption of social groups, institutions and communities; study of attempts to establish social controls in order to prevent, minimize, or mitigate the effects of socially disruptive conditions and events. (Not offered 1965-66.)
- 141-42 **Social Research Methods (3-3)** Cisin  
*First half:* introduction to the scientific method in the development of social theory and the solution to social problems. Research designs, including case studies, experiments, and surveys. *Second half:* continuation—concentrating on the translation of concepts into indices and the analysis and interpretation of research results, measurement, scales and scoring, hypothesis testing. (Academic year—day.)

- 144 **Mass Communications (3)** Monane  
The communications process; barriers to communication; structure and function of communication in society; content, control, support, and effects of mass communication. (1966-67 and alternate years.)

- 147 **Sociology of Large Organizations (3)** Brown  
Sociological analysis of the structural characteristics of large complex organizations, individual accommodations to such organizations, the impact of the large organizational pattern on American social life. (1965-66 and alternate years: spring—evening; summer 1965.)

- 149 **Development of Social Theory (3)** Stephens  
Systematic study of the important schools of sociological theory, both European and American development, and evaluation of the scientific contributions of each school. (Spring—day.)

### THIRD GROUP

- 220 **Religious Institutions in the United States (3)** Yeide  
Advanced study of the structural variety of religious institutions and the patterns of interaction between religious and secular institutions in contemporary American life. (1965-66 and alternate years: spring—evening.)

- 221 **Seminar: Current Emphases in Sociology (3)**  
Analysis and evaluation of recent developments in sociology and an appraisal of the role of systematic theory in sociology. (Fall—day.)

- 223 **Immigration and Assimilation (3)**  
Examination of the nature and scope of immigration, analysis of the adjustment of immigrants to a receiving society, the formation of ethnic and minority groups, the American experience. (Not offered 1965-66.)

- 228 **Criminal Behavior: Research and Theory (3)**  
A re-evaluation of theories of criminal and deviant behavior, based on recent research findings; implications for the correction and prevention of criminal behavior. (1966-67 and alternate years.)

- 231-32 **Seminar: Advanced Social Research Methods (3-3)** Cisin  
Intensive study and evaluation of current trends in the methodology of social research. Discussion focuses on individual student projects and recently published research. (1965-66 and alternate years: academic year—evening.)

- 233 **Theory Building and Applying (3)** Monane  
Critical examination of the elements of current theories in the social sciences with the major objective of developing general principles of theory construction; consideration of the functions of theory in sociological research. (Not offered 1965-66.)

- 240 **Sociology of Occupations and Professions (3)** Brown  
Analysis of occupational roles, occupational structures and changes within them, recruitment and training, adjustment problems at various stages of the career, relationships between stratification systems, life styles, and occupations. (1966-67 and alternate years.)

- 242 **Sociology of Health and Illness (3)** Brown  
A sociological analysis of social and cultural factors in the etiology and treatment of illness. Specifically covers social epidemiology, health and



the community, the patient and treatment, and social and cultural theory in health and illness. (1965-66 and alternate years: fall—evening.)

- 243 **Seminar: Industrial Sociology (3)** Brown  
Analysis of problems of the organization of work in industry, government, business; problems of decision making, recruitment, allocation of authority, informal organization, and inter-organizational relations. (1965-66 and alternate years: spring—evening.)
- 244 **Seminar: the American Class Structure (3)** Stephens  
(Summer 1965.)
- 295-96 **Research (arr.)** The Staff  
(Academic year—as arranged.)
- 299-300 **Thesis (3-3)** The Staff  
(Academic year—as arranged; summer 1965.)

## Spanish

See "Romance Languages and Literatures"

## Speech and Drama

*Professors* L. P. Leggette (*Chairman*), C. W. Pettit (*Director of Speech Clinic*), G. F. Henigan, Jr. (*Director of Forensics*), E. L. Stevens

*Professorial Lecturers* Zelda Fichandler, Edna Monsees, G. R. Herer, L. S. Bowling

*Associate Professors* Lee Bielski, Frances Henry

*Associate Professorial Lecturers* S. L. Berlinsky, A. A. Nilles

*Assistant Professors* K. R. Sanders, \*R. A. Honeygosky

*Assistant Professorial Lecturers* E. I. Shook, Ellie Chamberlain

*Instructor* A. N. Athanason

*Instructors (part-time)* Joan Regnell, Lois Richards, Ruth Cox, R. E. Roberts

### FIRST GROUP

#### A Speech Clinic Pettit, Honeygosky

Individual or group lessons, without academic credit, for such speech difficulties as lisping, cleft palate, articulatory problems, and stuttering. Fee: for individual lesson, \$7; for group lesson, \$4. (Academic year—as arranged; summer 1965.)

#### B-C American Speech for Foreign Students (3-3) Bielski

Class limited to foreign-born students. Instruction in the formation of the sounds of spoken English, with emphasis on rhythm and inflection. The International Phonetic Alphabet is used. Recording fee, \$5 a semester. (Academic year—day and evening; summer 1965.)

\* On leave of absence 1965-66.

- 1 Effective Speaking (3)** **The Staff**  
Preparation and delivery of extempore speeches, developing confidence and poise, body and voice control; selecting and organizing material. Recording fee, \$2. (Fall and spring—day and evening; summer 1965.)
- 2 Persuasive Speaking (3)** **Henigan, Sanders**  
A continuation of Speech 1, which is prerequisite, with emphasis on speech composition and elementary principles of persuasion. (Fall—day; spring—day and evening.)
- 11 Voice and Diction (3)** **Leggette and Staff**  
Developing ease, naturalness, and clarity in the speaking voice. Analysis of individual voices through recordings. Phonetic approach to the study of the sounds of English, the standards of speech. Class instruction in the problems of rate, volume, pitch, and quality. Recording fee, \$4. (Fall and spring—day and evening; summer 1965.)
- 32 Oral Reading (3)** **Leggette and Staff**  
Reading to others, theory and practice in the problems of interpreting the printed page. Prerequisite: Speech 11. Recording fee, \$2. (Fall—day; spring—day and evening; summer 1965.)
- SECOND GROUP**
- 101 Phonetics (3)** **The Staff**  
The International Phonetic Alphabet and its applications to the student's own speech improvement; also its application to such fields as theater, public speaking, speech correction, radio, television, and foreign languages. Prerequisite: Speech 11. Recording fee, \$4. (Fall and spring—day; summer 1965.)
- 102 Oral Interpretation of Literature (3)** **Leggette**  
Theory and practice in the problems of communicating meaning and emotion. Selections for study include poetry, prose, and drama. Prerequisite: Speech 32. Recording fee, \$2. (Spring—day.)
- 121 Group Discussion and Conference Leadership (3)** **Stevens**  
The process of thinking and problem solving in committees and small groups, and the methods of leading discussions and conferences. Prerequisite: 6 hours of speech or the permission of the instructor. (Fall—day; spring—evening; summer 1965.)
- 126 Public Discussion and Debate (3)** **Henigan**  
Principles and types of public discussion and debate; practice in argumentative speaking on questions of current interest. Prerequisite: 6 hours of speech or the permission of the instructor. (Spring—day.)
- 127-28 Advanced Debate Practice (1-1)** **Henigan**  
Admission by permission of the instructor, after one semester of satisfactory participation in the intercollegiate debate program. This course may be repeated for a total of 4 semester hours. (Academic year—as arranged.)
- 133-34 Radio and TV Broadcasting (3-3)** **Shook**  
A study of the development of the radio and TV industries, station organization and management, equipment, production techniques; practice in the preparation and performance of radio programs. Recording fee, \$5 a semester. (Academic year—evening.)

- 135-36 **Radio Workshop (1-1)** The Staff  
Practical work in campus radio station. (Academic year—as arranged.)
- 141 **Public Speaking: Advanced Forms (3)** Henigan  
The preparation and presentation of speeches for formal occasions with emphasis on the psychology of the audience. Prerequisite: 6 semester hours of speech. (Fall—day.)
- 145 **Speech Criticism (3)** Henigan  
A study of rhetorical theory with application to the criticism of representative American and British oratory. Admission by permission of the instructor. (Not offered 1965-66.)
- 153 **Acting (3)** Leggette  
Study and practice in the fundamentals of acting technique. Prerequisite: Speech 32. Laboratory fee, \$5. (Fall—day.)
- 154 **Play Direction (3)** Athanason  
Fundamentals of play direction. Under the supervision of the instructor, students prepare one-act plays for presentation. Laboratory fee, \$5. (Spring—day.)
- 155-56 **Play Production Practice (1-1)** The Staff  
Practical work in theater. (Academic year—as arranged.)
- 166 **History of the Theater (3)** Nilles  
A general survey of the rise of the theater: the Classical, Medieval, Renaissance, later English and Continental, and the Modern theater. (Not offered 1965-66.)
- 169 **Creative Dramatics (3)** Honeygosky  
A study of creative dramatics and its use as a learning tool. (Fall—evening; summer 1965.)
- 170 **Children's Theater (3)** Leggette  
Theory and practice in creating and producing plays for children. (Spring—evening.)
- 171 **Introduction to Speech Disorders (3)** Pettit  
A survey of the disorders of speech, including symptomatology, testing, causation, and principles of therapy. (Fall—day.)
- 173-74 **Speech Therapy (3-3)** Honeygosky  
Clinical techniques and procedures involved in the correction of the disorders of speech. Prerequisite: Speech 171 or concurrent registration and permission of the instructor. (Academic year—evening.)
- 176 **Speech, Hearing, and Language Development (3)** Henry  
Study of normal speech from vegetative processes to articulation, normal development of auditory function and the emergence of language. (Spring—day.)
- 177-78 **Clinical Practice in Speech Therapy (1-1)** The Staff  
Supervised case work in remedial speech—the University Speech Clinic, Children's Hospital, District of Columbia Crippled Children's Society, and Public School system. Weekly meetings to discuss therapeutic techniques for the common speech problems. Prerequisite: Speech 101, 171, 173, and permission of the instructor. (Academic year—as arranged; summer 1965.)



- 182 **Hearing Problems and the Testing of Hearing** (3) The Staff  
A study of the field of audiology with emphasis on the testing of hearing.  
(Fall—evening.)
- 183-84 **Clinical Practice in Hearing Therapy** (1-1) The Staff  
Supervised case work with persons handicapped with hearing losses—the University Speech Clinic, the Washington Hearing Society, and Children's Hospital. Prerequisite: Speech 182 and permission of the instructor.  
(Academic year—as arranged; summer 1965.)
- THIRD GROUP**
- 251 **Rehearsal and Performance** (2 to 4) Arena Stage Staff  
A course putting into practice the principles and techniques of acting through participation in lay rehearsals and performances at the Arena Stage. Admission by audition or interview. (Fall and spring—as arranged.)
- 254 **Directing Problems** (2 to 4) Arena Stage Staff  
Observation and participation in solving the problems involved in directing plays. Admission by interview. (Fall and spring—as arranged.)
- 255 **Techniques of Staging** (2 to 4) Arena Stage Staff  
Application of theory and principles of scene design, costuming, lighting, make-up, and related stage techniques. Admission by interview. (Fall and spring—as arranged.)
- 263 **Theater Management** (2 to 4) Arena Stage Staff  
Theory and practice in the psychology of handling the public: promotion, box office and house management. Admission by interview. (Fall and spring—as arranged.)
- 264 **Producing Problems** (2 to 4) Arena Stage Staff  
Problems involved in producing community and professional theater. Admission by interview. (Fall and spring—as arranged.)
- 277-78 **Advanced Clinical Practice in Speech Therapy** (1-1) The Staff  
(Academic year—as arranged.)
- 279 **Anatomy and Physiology of Speech and Hearing Disorders** (3) Henry  
Study of the structures and pathologies of speech and hearing. Laboratory fee, \$15. (Fall—day; summer 1965).
- 280 **Neurophysiology of Communication Problems** (3) Henry  
Study of peripheral and central nervous systems and their involvement in speech, hearing, and language problems. Laboratory fee, \$15. (Spring—day.)
- 283 **Advanced Audiology** (3) Bowling  
Advanced problems and testing techniques in audiology. Laboratory fee, \$7.50. (Spring—evening.)
- 284 **Dynamic Phonetics** (3) Henry  
Techniques and instrumentation for examining speech. Laboratory fee, \$7.50. (Fall—day.)
- 285 **Childhood Aphasia** (4) Monsees  
Designed to acquaint speech therapists and teachers of exceptional children with the McGinnis Association Method of rehabilitation; background lectures dealing with neurological, psychological, and psychiatric aspects of

language disorders in children; current theories and practices in therapy. Observation and clinical practice with classes of aphasic children at the Children's Hospital School for Aphasic Children. Prerequisite: undergraduate degree in speech and hearing, special education, or allied fields. (Not offered 1965-66.)

- 286 **Differential Diagnostics** (3) Pettit and Staff  
 Etiology for clinical observation; techniques in history taking, patient counselling, and management. Laboratory fee, \$5. (Spring—day.)
- 287-88 **Seminar: Communicology** (3-3) Pettit and Staff  
 Extensive study of specific problems in aphasia, cleft palate, mental retardation, stuttering, and other speech disorders. (Academic year—evening; summer 1965—Speech 287 (3).)
- 294 **Research in Dramatic Art** (arr.) The Staff  
 (Spring—as arranged.)
- 295-96 **Research in Speech and Hearing** (arr.) The Staff  
 (Academic year—as arranged; summer 1965—Speech 295 (3).)
- 299-300 **Thesis** (3-3) The Staff  
 (Academic year—as arranged; summer 1965—Speech 299 (3).)

#### RELATED COURSES IN OTHER DEPARTMENTS

Classical Languages and Literatures 71-72 *Greek and Roman Backgrounds in Literature* (3-3)  
 English 125 *Introduction to English Linguistics* (3)  
 English 135-36 *Shakespeare* (3-3)  
 English 175-76 *American Drama* (3-3)  
 English 183-84 *The English Drama* (3-3)  
 English 235-36 *Studies in Shakespeare and His Contemporaries* (3-3)  
 Education 134 *Student Teaching in Secondary Schools* (6 to 9)  
 Education 137 *Teaching Speech* (2 to 4)  
 Psychology 115 *Psychology of Language and Communication* (3)

#### COURSE OFFERED IN SPECIAL PROGRAM—SUMMER 1965

- 157 *Workshop in Producing Shakespeare* (4)

#### Statistics

*Professors* E. H. Johnson, H. F. Bright, Solomon Kullback (*Chairman*), Minoru Sakaguchi (*Visiting*)  
*Professorial Lecturers* Samuel Greenhouse, Seymour Geisser, Morton Kupperman, Rufus Isaacs  
*Associate Professors* \*Murray Brown, H. W. Lilliefors  
*Associate Professorial Lecturers* W. M. Wolman, Arthur Kirsch  
*Assistant Professor* R. E. Thomas  
*Assistant Professorial Lecturers* S. J. Armore, Selig Starr, R. H. Shumway

\* On leave of absence 1965-66.

*Instructor* J. K. Kern

*Instructor (part-time)* Charles Anello

#### FIRST GROUP\*

- 51 **Introduction to Business and Economic Statistics (3)** The Staff  
Lecture (2 hours), laboratory (2 hours). Survey of elementary principles and procedures for presenting, analyzing, and interpreting statistical data; consideration of characteristic values; measures of variability, sampling processes, index numbers, time series analysis, and simple correlation. Prerequisite: one entrance unit in algebra. Laboratory fee, \$9. (Fall and spring—day and evening; summer 1965.)
- 52 **Mathematics of Finance (3)** The Staff  
Lecture (3 hours). Interest and discount, annuities, valuation of stocks and bonds, sinking funds, amortization, valuation of depletable assets, depreciation. Prerequisite: one entrance unit in algebra. (Fall and spring—day.)
- 53 **Introduction to Statistics in Psychology and Education (3)** The Staff  
Lecture (2 hours), laboratory (2 hours). Sources of data, tabulation, charts and graphs, averages, dispersion, quartiles and percentiles, raw scores and derived scores, frequency distributions, reliability and validity of tests, normal curve, correlation, elementary sampling, and an introduction to estimation and tests of hypotheses. Prerequisite: one entrance unit in algebra. Laboratory fee, \$9. (Fall and spring—day and evening; summer 1965.)
- 91 **Principles of Statistical Methods † (3)** The Staff  
Lecture (2 hours), laboratory (2 hours). Variates and attributes, averages and dispersion, frequency distributions and their characteristics, regression and correlation, statistical decision processes. Prerequisite: one entrance unit in algebra. Laboratory fee, \$9. (Fall—evening; spring—day; summer 1965.)

#### SECOND GROUP

- 104 **Statistics in Psychology and Education (3)** The Staff  
Lecture (2 hours), laboratory (2 hours). Introductory study of statistical techniques necessary for application of statistics in research problems in psychology and education. Laboratory fee, \$9. (Fall—Saturday morning; summer 1965.)
- 105 **Statistics in Psychology and Education (3)** The Staff  
Lecture (2 hours), laboratory (2 hours). Advanced study of statistical techniques necessary for an application of statistics in research problems. Analysis of variance, correlation techniques, chi-square applications, and sampling theory. Prerequisite: Statistics 53 or 104. Laboratory fee, \$9. (Spring—Saturday morning.)
- 106 **Factor Analysis (3)** Kirsch  
Matrix theory as applied to factor analysis, introduction to the concepts of factor analysis and their utility in various phases of research. Prerequisite: Statistics 105 or the equivalent. Laboratory fee, \$20. (1965–66 and alternate years: fall—evening.)

\* Of first-group courses, Statistics 51, 53, and 91 are related in their subject matter, and credit hours for only one of the three may be applied toward a degree. Statistics 52 lies outside of this group, and may be taken for degree credit in combination with any one of the other three.

† Statistics 91 is for Statistics majors, for students in engineering and in the biological and physical sciences.



- 107 Statistics for Engineers (3)** **The Staff**  
Simple probability models, discrete and continuous distributions, sampling, hypothesis testing and estimation, nonparametric tests. Emphasis on engineering applications. Prerequisite: differential and integral calculus. (Fall and spring—evening; summer 1965.)
- 110 Quality Control Techniques (3)** **The Staff**  
Applications of probability and distribution theory to industrial control problems; use of quality and control charts; acceptance sampling plans; estimation of lot and process characteristics. Prerequisite: Statistics 51 or permission of instructor. (1966-67 and alternate years.)
- 111 Business and Economic Statistics I (3)** **Johnson**  
Statistical processes as related to the problems of business and economic research with emphasis on decision making under conditions of uncertainty. Topics include averages, dispersion, analysis of variance, correlation, quality control, and index numbers. Prerequisite: Statistics 51 or permission of instructor. (Fall—day and evening.)
- 112 Business and Economic Statistics II (3)** **Johnson**  
Specific problems of business and economics with statistics as a tool of analysis. Introduction to principles and use of linear programming, game theory and queueing theory techniques. Study of various economic relationships, including demand, supply, cost and price functions. Prerequisite: Statistics 111 or equivalent. (Spring—day and evening.)
- 117 Analysis of Variance I (3)** **The Staff**  
Lecture (2 hours), laboratory (2 hours). The analysis of variance to segregate factors producing significant variation; a method to estimate experimental error, multiple classifications, Latin Square, Greco-Latin Square, factorials; an introduction to model theory. Prerequisite: Statistics 91. Laboratory fee, \$9. (Fall—evening; spring—day; summer 1965.)
- 118 Correlation and the Chi-square Test I (3)** **The Staff**  
Lecture (2 hours), laboratory (2 hours). Regression and correlation theory: simple, partial, and multiple; nonparametric methods; analysis of covariance; contingency table analysis; tests of goodness of fit. Prerequisite: Statistics 91. Laboratory fee, \$9. (Fall—day; spring—evening.)
- 122 Forecasting Principles and Techniques (3)** **Johnson**  
Survey and appraisal of techniques for measuring the state of business conditions and an examination of current indicators. Study of procedures for estimating future values: budget requirements, price levels, or level of general business activity. Prerequisite: Statistics 51 or the equivalent. (Spring—day.)
- 123 Introduction to Econometrics (3)** **Johnson**  
A basic quantitative approach to fundamental problems in economic theory involving the use of statistical processes, simple model construction, and probability considerations. Prerequisite: elementary course in Economics and Statistics. (Fall—day.)
- 155 Introduction to Mathematical Probability (3)** **The Staff**  
Probability distributions, Bayes' theorem and postulate, Bernoulli's theorem and its experimental verification, mathematical expectation, laws of large numbers. Prerequisite: permission of instructor. (Fall—day; spring—evening.)

- 157-58 Mathematical Statistics (3-3)** **The Staff**  
 Distribution theory, sampling theory, estimation, hypothesis testing, confidence methods, regression analysis, experimental design. Prerequisite: differential and integral calculus. (Academic year—day and evening.)
- 187 Theory of Sampling (3)** **Lilliefors**  
 Problems of sampling and sample design. Admission by permission of the instructor. (1965-66 and alternate years: fall—evening.)
- 188 Nonparametric Statistical Inference (3)** **Lilliefors**  
 Statistical inference when the form of the underlying distribution is unknown, sign tests, rank order statistics, theory of runs, nonparametric discriminant analysis. (1965-66 and alternate years: spring—evening.)
- 189-90 Mathematical Probability and Applications (3-3)** **Starr**  
 Combinatorial analysis, conditional probability and stochastic independence, probability distributions, laws of large numbers, recurrent events, random walks, Markov chains, simple time-dependent stochastic processes. Prerequisite: Statistics 155 or permission of instructor. (Academic year—evening.)
- 193 Statistical Mathematics \* (3)**  
 Problems in statistics with the development of real variable theory necessary for their solution. Prerequisite: differential and integral calculus. (Not offered 1965-66.)
- 194 Statistical Mathematics \* (3)**  
 Problems in statistics with the development of complex variable theory necessary for their solution. Prerequisite: differential and integral calculus. (Not offered 1965-66.) Statistics 194 is the same as Mathematics 157 which will be offered fall—evening.
- 195-96 Reading and Research in Statistics (arr.)** **The Staff**  
 (Academic year—as arranged.)
- 197 Digital Computer Programming with Applications (3)** **Thomas**  
 Lecture (2 hours), laboratory (2 hours). The use of the digital computer in statistical and other computational work. Machine language, SPS and FORTRAN programming. Writing, debugging, and running programs on the digital computer, using the IBM 1620 in the University Computing Center. Prerequisite: permission of the instructor. Laboratory fee, \$20. (Fall and spring—day; summer 1965.)

### **THIRD GROUP\***

- 207-8 Operations Analysis (3-3)** **Lilliefors**  
 Basic concepts and techniques of operations analysis as applied to problems in business management and economic research. An introduction to the processes of linear programming, game theory, and queueing theory. (Academic year—evening.)
- 217-18 Experimental Design (3-3)** **Wolman**  
 Advanced theory of the applications of the linear and other hypotheses to experimental design. (1965-66 and alternate years: academic year—evening.)

\* Prerequisite to all third-group courses: Mathematics 124 and Statistics 193 and 194, or the equivalent, and permission of the instructor.

### **204 STATISTICS**



- 257 **Advanced Mathematical Statistics I (6)** Kupperman  
Distribution functions, sequences of random variables, characteristic functions, sampling theory, linear statistical estimation. (Fall—evening.)
- 258 **Advanced Mathematical Statistics II (6)** Kupperman  
Statistical estimation, tests of hypotheses, sequential analysis, statistical decision functions, time series, multivariate statistical theory. (Spring—evening.)
- 259-60 **Advanced Mathematical Probability (3-3)** Kullback  
Measure theory, probability spaces, random variables, probability distributions, sequences of random variables, conditioning, Martingales. (1965-66 and alternate years: academic year—day.)
- 261-62 **Information Theory for Engineers (3-3)** Kullback  
The elements of information theory and its statistical and probabilistic background from an elementary point of view (nonmeasure-theoretic). Measures of information, entropy, and their properties. Discrete stochastic sources, message ensembles. The transmission of information, channels, channel capacity. Encoding and decoding including error detection and correction. The fundamental theorems of information theory. (1966-67 and alternate years.)
- 263-64 **Topics in Statistical Inference (3-3)** Greenhouse  
Estimation; methods in point estimation—moments, least squares, maximum likelihood, etc; confidence and fiducial intervals; testing of statistical hypotheses; tests of significance; likelihood ratio; nonparametric and distribution free methods; likelihood—odds and the odds ratio; Bayesian inference—the use of prior knowledge, ignorance and diffuse prior distributions, point and interval estimation in the posterior distribution; selected topics in decision theory and information theory. (Academic year—evening.)
- 265-66 **Multivariate Analysis (3-3)** Geisser  
A year course: credit is not given for the first half until the second half is completed. Tests of significance, generalized variance and covariance, tests of independence, canonical and vector correlations, multivariate, normal distribution, generalized Student's ratio, problems of estimation, applications to factor analysis. (Academic year—evening.)
- 267-68 **Characteristic Functions (3-3)** The Staff  
A year course: credit is not given for the first half until the second half is completed. Fourier integrals, set functions, inversion formulas, limit theorems, applications to the distribution problem in statistics. (1966-67 and alternate years.)
- 269 **Sequential Testing (3)** The Staff  
(1967-68 and every third year.)
- 270 **Statistical Decision Theory (3)** The Staff  
(1967-68 and every third year.)
- 271-72 **Statistical Information Theory (3-3)** Kullback  
A year course: credit is not given for the first half until the second half is completed. Basic concepts, definitions, and formulas of information theory; their significance and general properties. Shannon's coding theorem, channel capacity, and transmission of information; inequalities of information theory and sufficiency; applications to statistical problems of discrimination and hypothesis testing. Asymptotic distribution theory of information; analysis



of contingency tables; loss of information due to grouping and sequential analysis; comparison of experiments. (1966-67 and alternate years.)

- 273-74 **Stochastic Processes (3-3)** Kullback  
A year course: credit is not given for the first half until the second half is completed. Fundamental notions of stochastic processes; random walks; Markov processes; differential processes; Gaussian processes; applications. (1966-67 and alternate years.)
- 275 **Econometrics I: Introduction to Econometric Studies \* (3)** Brown  
Survey of econometrics. (Fall—evening.)
- 276 **Econometrics II: Econometric Methods \* (3)** Brown  
Development of the methods of econometrics. Prerequisite: differential and integral calculus, matrix theory, and Statistics 275. (Spring—evening.)
- 277 **Econometrics III: Advanced Topics in Econometrics \* (3)** Brown  
The analysis of econometric techniques. Prerequisite: Statistics 275 and mathematical economics. (Spring—evening.)
- 278 **Econometrics IV: Seminar in Econometrics \* (3)** Brown  
A research seminar. Prerequisite: Statistics 275, 276, 277. (Fall—evening.)
- 279-80 **Differential Games (3-3)** Isaacs  
(Academic year—evening.)
- 295-96 **Reading and Research (3-3)** The Staff  
(Academic year—as arranged.)
- 297 **Seminar: Problems in Mathematical Statistics (3)** Kullback  
(Summer 1965.)
- 299-300 **Thesis (3-3)** The Staff  
(Academic year—as arranged.)

#### COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above the University offers the following courses for students enrolled in the following special programs: Navy Graduate Financial Management Program, Air Force Advanced Management Program, Engineering Administration, and Health Care Administration.

- 101-2 **Basic Principles of Statistical Methods (3-3)**  
Variables and attributes, averages and dispersion, elementary principles of sampling, introduction to the making of statistical decisions.
- 119 **The Bases of Statistical Decision Making (arr.)**  
Introduction to the techniques of decision making, with emphasis on applications rather than theory. Includes: binomial distribution, normal distribution, Type I and II errors, estimation, research methodology, and problems of inference. (Summer 1965.)

\* An interdepartmental course offered by the departments of Economics and Statistics. Students may register in either department.

**120 Principles of Statistical Analysis (3)**

Introduction to the basic concepts of statistical analysis, measures of central tendency, dispersion, normal distribution, basic statistical inference including estimation and testing hypotheses. (Summer 1965.)

**250 Managerial Statistics and Quality Control (3)**

The application of statistical principles and practices to management and quality control. Emphasis is placed on the use of statistical techniques in making management decisions, controlling quality and standardization. Prerequisite: Statistics 107 or the equivalent.

## **Zoology**

---

See "Biological Sciences"

## COLLEGES AND SCHOOLS—DEGREE PROGRAMS

COLUMBIAN COLLEGE OF ARTS AND SCIENCES: Associate in Arts (A.A.), Associate in Science (A.S.), Bachelor of Arts (A.B.), Bachelor of Science (B.S.), Bachelor of Science in Medical Technology (B.S. in Med. Tech.), Master of Arts (A.M.), Master of Fine Arts (M.F.A.), and Master of Science (M.S.)

GRADUATE COUNCIL: Doctor of Philosophy (Ph.D.)

SCHOOL OF MEDICINE: Doctor of Medicine (M.D.)

NATIONAL LAW CENTER:

LAW SCHOOL: Bachelor of Laws (LL.B.)

GRADUATE SCHOOL OF PUBLIC LAW: Master of Laws (LL.M.), Master of Comparative Law (M.Comp.L.), and Doctor of Juridical Science (S.J.D.)

SCHOOL OF ENGINEERING AND APPLIED SCIENCE: Engineering Technologist Certificate (E.T.C.), Bachelor of Science (B.S.), Master of Science (M.S.), Master of Engineering Administration (M.E.A.), and Doctor of Science (D.Sc.)

SCHOOL OF EDUCATION: Bachelor of Arts in Education (A.B. in Ed.), Bachelor of Science in Physical Education (B.S. in P.E.), Master of Arts in Teaching (A.M. in T.), Master of Arts in Education (A.M. in Ed.), Education Specialist (Ed.S.), and Doctor of Education (Ed.D.)

SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS: Bachelor of Arts in Government (A.B. in Govt.), Bachelor of Business Administration (B.B.A.), Certificate of the Institute for Sino-Soviet Studies (Cert. of I.S.S.S.), Master of Arts in Government (A.M. in Govt.), Master of Business Administration (M.B.A.), Master of Public Administration (M.P.A.), Graduate Certificate in Health Care Administration (Grad. Cert. in H.C.A.), Doctor of Business Administration (D.B.A.), and Doctor of Public Administration (D.P.A.)

COLLEGE OF GENERAL STUDIES: Associate in Arts (A.A.), Associate in Science (A.S.), Associate in Secretarial Administration (A.Sec.Adm.), Bachelor of Arts (A.B.), Bachelor of Business Administration (B.B.A.), Bachelor of Science in Geodetic and Cartographic Science (B.S. in Geod. and Cart. Sc.), Master of Science in Business Administration (M.S. in B.A.), Master of Science in Financial Management (M.S. in Fin. Mgt.), Master of Science in Governmental Administration (M.S. in Govt. Adm.), Master of Science in International Affairs (M.S. in I.A.), Master of Science in Personnel Administration (M.S. in Per. Adm.), and Master of Science in Public Administration (M.S. in P.A.)



## ANNUAL ISSUES OF THE UNIVERSITY BULLETIN

*Requests for the following publications should be addressed as indicated.*

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SCHEDULE OF CLASSES: SUMMER SESSIONS, Dean of the Summer Sessions

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*Jessie Bigelow Martin, A.B., Editor of Academic Publications*

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**THE GEORGE WASHINGTON UNIVERSITY BULLETIN**

**THE SCHOOL OF MEDICINE 1966-1967**



AUGUST 1965

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**THE GEORGE WASHINGTON UNIVERSITY BULLETIN**

**THE SCHOOL OF MEDICINE**

**1966-1967**

**WASHINGTON, D.C. 20006**



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Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Director of Admissions, The George Washington University, Washington, D. C. 20006.

Information concerning courses of instruction, programs, and faculties of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on page 104.

<i>General Admission</i>	Director of Admissions, Building C
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<i>School of Medicine Admission</i>	1339 H Street NW.
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<i>Alumni Association</i>	Alumni Office, Bacon Hall
<i>Medical Alumni Association</i>	1335 H Street NW.
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<i>Veterans Education</i>	

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<i>In Engineering or Applied Science</i>	Dean of The School of Engineering and Applied Science
<i>In Law</i>	Dean of The Graduate School of Public Law
<i>In Accounting, Business Administration, Business and Economic Statistics, Economic Policy, Health Care Administration, International Affairs, Personnel Administration, Public Administration, Public Affairs</i>	Dean of The School of Government, Business, and International Affairs

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30																								



## THE CALENDAR\*

### 1965-1966 ACADEMIC YEAR

#### 1965 FALL SEMESTER

September 9	REGISTRATION <i>Thursday</i>
September 10-13	ORIENTATION FOR FRESHMEN <i>Friday-Monday</i>
September 13	OPENING ASSEMBLY <i>Monday</i>
September 14	CLASSES BEGIN <i>Tuesday</i>
November 11	VETERANS DAY (HOLIDAY) <i>Thursday</i>
November 25-27	THANKSGIVING RECESS <i>Thursday-Saturday</i>
December 20-January 1	CHRISTMAS RECESS <i>Monday-Saturday</i>
January 3	CLASSES RESUME <i>Monday</i>
January 15	LAST DAY OF FALL SEMESTER <i>Saturday</i>
January 17-22	EXAMINATION PERIOD <i>Monday-Saturday</i>

#### 1966 SPRING SEMESTER

January 24	CLASSES RESUME FOR SPRING SEMESTER <i>Monday</i>
February 21	WINTER CONVOCATION <i>Monday</i>
February 22	GEORGE WASHINGTON'S BIRTHDAY (HOLIDAY) <i>Tuesday</i>
April 8-9	SPRING RECESS <i>Friday-Saturday</i>
May 20	LAST DAY OF SPRING SEMESTER <i>Friday</i>
May 21-28	EXAMINATION PERIOD <i>Saturday-Saturday</i>
May 30	MEMORIAL DAY (HOLIDAY) <i>Monday</i>
June 5	BACCALAUREATE SERVICE <i>Sunday</i>
June 5	COMMENCEMENT <i>Sunday</i>

### 1966-1967 ACADEMIC YEAR

#### 1966 FALL SEMESTER

September 8	REGISTRATION <i>Thursday</i>
September 9-12	ORIENTATION FOR FRESHMEN <i>Friday-Monday</i>
September 12	OPENING ASSEMBLY <i>Monday</i>
September 13	CLASSES BEGIN <i>Tuesday</i>
November 11	VETERANS DAY (HOLIDAY) <i>Friday</i>
November 24-26	THANKSGIVING RECESS <i>Thursday-Saturday</i>
December 19-31	CHRISTMAS RECESS <i>Monday-Saturday</i>
January 2	CLASSES RESUME <i>Monday</i>
January 14	LAST DAY OF FALL SEMESTER <i>Saturday</i>
January 16-21	EXAMINATION PERIOD <i>Monday-Saturday</i>

#### 1967 SPRING SEMESTER

January 23	CLASSES RESUME FOR SPRING SEMESTER <i>Monday</i>
February 22	WINTER CONVOCATION (HOLIDAY) <i>Wednesday</i>
March 24-25	SPRING RECESS <i>Friday-Saturday</i>
May 19	LAST DAY OF SPRING SEMESTER <i>Friday</i>
May 20-27	EXAMINATION PERIOD <i>Saturday-Saturday</i>
May 30	MEMORIAL DAY (HOLIDAY) <i>Tuesday</i>
June 4	BACCALAUREATE SERVICE <i>Sunday</i>
June 4	COMMENCEMENT <i>Sunday</i>

Registration for the Fall Semester 1967-68, Thursday,  
September 7.

\* The examination schedule and semester breaks do not apply to third- and fourth-year students. See special schedule.



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\* Faculty and committee members for the academic year 1965-66.

† The President of the University, the Dean of Faculties, the Registrar of the University, and the Director of Admissions of the University are ex officio members of the Faculty.

‡ On sabbatical leave 1965-66.

§ The Dean and Associate Deans of the School of Medicine are ex officio members of all committees.



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J.M. Bailey, H.C. Pierpont, W.W. Stanbro, Elizabeth Tidball

## General Information

THE SCHOOL OF MEDICINE OF THE GEORGE WASHINGTON UNIVERSITY has a distinguished history that goes back more than a century. In March 1825 the School opened with the intention of building "a medical school commensurate with the progress and demands of a rising metropolis, and the improvement of service throughout the country." The School of Medicine, the eleventh oldest in the country, has met this responsibility by providing students with a foundation in the medical sciences upon which they can build a medical career in practice, teaching, research, or administration.

In 1844, the School took on a new dimension when Congress granted it the use of the Washington Infirmary. The Nation's Capital thus acquired its first general hospital, and the Nation one of its earliest teaching hospitals.

At the turn of the century the School was located at its present site—in the center of Washington—close to the world-renowned library facilities, comprehensive government medical museums and numerous federal medical research and scientific establishments.

The long history of The George Washington University School of Medicine closely parallels the growth of the Nation and the development of medical science. The School has contributed to both.

## OBJECTIVES

THE PURPOSE OF THE SCHOOL OF MEDICINE is to prepare men and women in the art and science of medicine to meet the health needs of a growing, ever changing society. It is the responsibility of the School to provide its students with a systematic plan of instruction in the basic medical sciences, with well-guided clinical experience, with opportunities for expression in research, and with a philosophy in keeping with the highest ethics of the profession.

To achieve these objectives, the School has developed a progressive plan of instruction and a balanced, comprehensive curriculum. To carry out the program, the School maintains an outstanding faculty and makes use of facilities which provide exceptional opportunities for research and clinical training.

## PLAN OF INSTRUCTION

THE FACULTY AND ADMINISTRATION of the School of Medicine have developed and initiated a program of medical education through careful study of past performance, present opportunity, and future need.

The curriculum provides graduated instruction, beginning with the basic medical sciences and expanding to include the more complex aspects of health maintenance and care of the sick. It provides a broad basic preparation for a career in medicine.

In the first year, the schedule begins with an orientation period designed to introduce the new students to the Faculty, the upperclassmen, and the environment for their medical education.

The first semester is devoted to the study of the sciences (anatomy and biochemistry) concerned with the structure and composition of the normal human body. In the second semester of the first year, the science of normal function is further emphasized by courses in

physiology. These studies of the normal provide a basis for the emphasis on health maintenance which is a strong positive characteristic of the University's new teaching program. During the second semester the student is also introduced to the concept of disease in a course in microbiology, where the various microbial agents and their effects upon the human body are studied. Elective courses are offered in the second semester of the first year and provide an opportunity for the student to begin the development of special interests under the guidance of skilled advisers.

The basic courses of the first semester of the second year are pathology and pharmacology. In the former the student learns the nature and causes of disease as well as the alterations produced by disease in the tissues and fluids of the human body. He learns to recognize and evaluate the significance of the abnormal. Pharmacology provides an understanding of the mode of action of the various agents employed in the treatment of the sick, and emphasizes the safest and most effective means for their use. Opportunities for elective study are increased during the second year.

The second semester of the second year and the first semester of the third are planned to acquaint the student with the principles and methods of clinical diagnosis and therapy, and to develop in him an awareness of the physician's responsibility to his patients. The basic concepts of laboratory medicine are taught in special laboratory facilities. During the second term of the second year, two and a half days are available each week for electives.

The fall semester of the third year provides the student with his first responsibility for patient care. In the Continuing Care Program, each student is assigned several patients for study in depth, including an evaluation of family, home, and community as they may contribute to the illness or to recovery. This program is decentralized so that the student can become familiar with community health resources in an area near his own home. Preceptors provide close personal supervision of all aspects of the project.

In addition to the Continuing Care Program, lectures and demonstrations provide additional background in theory and principles for the clinical experiences which will follow. Of special significance is the series called "Major Clinical Situations," in which the students are presented with simulated clinical problems and participate in their solution.

During the final 16 months of the curriculum, each student has a 12-month clinical clerkship assignment in the University Hospital and Clinics and in affiliated hospitals. Patients with a wide variety of illnesses are assigned to each student for close personal study under the guidance of a faculty skilled in the various specialties of medical practice. In the course of the clerkship, the student is given increasing responsibility as he demonstrates competence and professional maturity.

During an eight-week elective period, each student has an opportunity to explore general practice, specialty practice, or areas of research which may be of help in deciding the direction of his career. Students with exceptional interests and proven ability may be permitted to spend their elective period in other universities, including those of foreign countries, but most students will find ample opportunities in the University's own published schedule of approximately 150 different electives for upperclassmen.



## CURRICULUM

### A. The Basic Medical Sciences

FIRST	TERM I (16 weeks)
YEAR	TERM II (16 weeks)

ANATOMY AND BIOCHEMISTRY

PHYSIOLOGY AND MICROBIOLOGY  
plus 4 semester-hour credits of electives in  
Anatomy and Biochemistry

(16-week vacation)

SECOND	TERM III (16 weeks)
YEAR	TERM IV (16 weeks)

PATHOLOGY AND PHARMACOLOGY  
plus 6 semester-hour credits of electives in  
Physiology and Microbiology

### B. The Intermediate Terms

PHYSICAL DIAGNOSIS, LABORATORY MEDICINE,  
PSYCHIATRY, INTRODUCTORY CLINICAL LEC-  
TURES  
plus 6 semester-hour credits of electives in  
Pathology, Pharmacology, and others

(16-week vacation)

THIRD	TERM V (14 weeks)
AND	
FOURTH	
YEARS	CLINICAL CLERKSHIPS
(the last 72 weeks in rotation, including 8-week vacation)	(56 weeks)
	ELECTIVES (8 weeks)

MAJOR CLINICAL SITUATIONS, CONTINUING  
CARE PROGRAM, LECTURES IN CLINICAL SUB-  
SPECIALTIES  
plus 3 semester-hour credits of electives in  
Psychiatry, Hematology, Nutrition, Metab-  
olism, etc.

### C. Patient Care

INPATIENT CLERKSHIPS:  
Psychiatry (4 weeks), Medicine (12 weeks),  
Surgery (12 weeks), Obstetrics and Gynecol-  
ogy (8 weeks), Pediatrics (8 weeks)  
OUTPATIENT CLERKSHIPS:  
General Medicine and Medical Specialties (8  
weeks), Emergency Room (4 weeks)

### D. Career Electives

SUPPLEMENTARY CLINICAL CLERKSHIPS OF  
BASIC SCIENCE OF CLINICAL RESEARCH

## DEGREES

THE FOUR-YEAR PROGRAM of the School of Medicine, described above,  
leads to the degree of Doctor of Medicine.

In cooperation with Columbian College of Arts and Sciences a  
seven-year curriculum leading to the combined degrees of Bachelor of  
Arts and Doctor of Medicine and a program leading to the combined  
degrees of Master of Science and Doctor of Medicine are offered.

The basic science departments of the School of Medicine cooperate  
with Columbian College in offering the degrees of Master of Arts or  
Master of Science in the fields of anatomy, biochemistry, microbiology,  
pharmacology, and physiology.

The basic science departments also cooperate with the Graduate  
Council in directing the research of candidates for the degree of  
Doctor of Philosophy in more than fifty fields of the medical sciences.

## EQUIPMENT AND FACILITIES

FACILITIES FOR THE SCHOOL OF MEDICINE are located at 1331, 1335, 1337, and 1339 H Street NW., in downtown Washington.

*Administrative Offices.*—The administrative offices of the School, 1331 H Street, consist of the offices of the Dean, Medical Admissions, Research Administration, and Public Relations.

*Medical School Buildings.*—In the buildings housing the School of Medicine, 1335 and 1337 H Street, there are lecture rooms, classrooms, students' rooms, and the following laboratories: anatomy, biochemistry, microbiology, pathology, pharmacology, and physiology. The laboratories are fully equipped to enable students to pursue adequately the laboratory courses and to acquire the technical skill necessary in modern clinical and investigative work.

*Research Building.*—The Research Building, 1339 H Street, houses special laboratories for graduate and staff research in the departments of Anatomy, Biochemistry, Microbiology, Pharmacology, and Physiology. Special facilities are provided for the study of radioactive compounds, for tissue-culture techniques, and virologic procedures. Qualified students are invited to participate in certain aspects of the research program either on a volunteer basis or with the support of special Research Scholarships.

*Teaching Aids.*—This administrative unit of the School of Medicine directs the activities of the following service functions: Medical Illustration and Photography, Audio-visual Facilities, and Xerox Duplication.

*Medical Library.*—The Medical Library in well-equipped quarters on the first floor of 1339 H Street NW., contains 30,000 carefully selected volumes, including the new medical works and the principal medical journals.

Interlibrary loan service is maintained with other medical and scientific libraries.

The Medical Library is open from 9:00 A.M. to 10:00 P.M. each class day, Monday through Friday, and from 9:00 A.M. to 5:00 P.M. Saturday.

A branch of the Medical Library is maintained in the University Hospital for the use of the resident physicians, interns, and students. It is open Monday through Friday, 1:00 to 5:00 P.M. and 6:00 to 11:00 P.M. During the academic year the library is also open Saturday and Sunday from 1:00 to 5:00 P.M.

*The George Washington University Hospital.*—This 550-bed hospital is staffed and directed by the Faculty of The George Washington University School of Medicine. It provides excellent clinical opportunity for the instruction of medical students. Specialties in the fields of medicine and surgery have assigned space and equipment for the diagnosis and care of ambulatory and hospital patients.

## GOVERNMENT MUSEUMS

The Armed Forces Institute of Pathology, on the grounds of Walter Reed Army Medical Center, affords unexcelled opportunity for study of conditions met in general medicine and surgery as well as those of

special military significance. Its collection of anatomical and pathological specimens comprises material received from all areas of the world and is unequaled in this country. The Museum of Hygiene, the National Museum, the Smithsonian Institution, the Botanic Gardens, and the various collections of the Department of Agriculture all afford opportunity for study of materials of special interest in various areas of Medicine and its allied sciences.

### CLINICAL FACILITIES

STUDENTS at The George Washington University School of Medicine receive clinical training at the University Hospital, at the University Cancer Clinic, and at affiliated hospitals.

*The George Washington University Hospital.*—The Medical Director and Chiefs of Services are responsible for the supervision of patient care. The individual student has direct responsibility to patients under supervision. Clinical conferences are held in which the history of patients, laboratory records, and the physical and pathological findings are presented and correlated.

The Meyer Pavilion, a new addition, has greatly enriched the facilities of the University Hospital by making available new monitored operating rooms; a clinical research unit; a radioisotope laboratory; and radiotherapy facilities, which include a linear accelerator.

*The University Clinics.*—The University Clinics have facilities for each Service in the Hospital. Students are assigned in rotation by section for instruction in the University Clinics.

*The George Washington University Cancer Clinic.*—The Helen L. and Mary E. Warwick Memorial Building houses the Cancer Detection Clinic and special laboratories for research related to the nature, diagnosis, and treatment of cancer.

The facilities of the Cancer Detection Clinic are used for teaching medical students. The diagnosis and treatment of various forms of neoplasms are presented. The results of treatment are evaluated by follow-up studies.

*District of Columbia General Hospital.*—The District of Columbia General Hospital, one of the ten largest general hospitals in the country, is a teaching facility for students at the School of Medicine.

The Hospital has a bed capacity of approximately 1,300. It is the principal facility for the care of the indigent sick of the community. In 1963 the outpatient department had over 153,000 clinical visits. Approximately 180 patients are registered daily in the admitting and emergency service, of whom 12 per cent are admitted to the Hospital. This is the largest emergency service in the District, and a great variety of acute medical and surgical problems are examined and treated.

*Children's Hospital.*—This is one of the largest and best known hospitals for children in the United States. Medical students receive training and clinical experience in pediatrics on both clinic and inpatient services. Special lectures and clinical work in child psychiatry are given in Children's Hospital.



*St. Elizabeths Hospital.*—Saint Elizabeths Hospital, established by an act of Congress in 1855, is a federal psychiatric hospital administered under the Department of Health, Education, and Welfare. This Hospital provides for the treatment, care, and general well-being of approximately 7,600 patients of whom 6,000 are resident. The facility includes a completely approved General Hospital to meet the needs for medical and surgical care and functions with a full-time staff within the Hospital plus attending physicians in various specialties.

The Hospital maintains an up-to-date medical library.

The medical students of The George Washington University utilize the facilities of Saint Elizabeths for clinical psychiatric training.

The opportunities for research are enhanced by a cooperative arrangement with the National Institute of Mental Health of the United States Public Health Service.

*The Fairfax Hospital.*—This new and already expanding 300-bed voluntary community teaching hospital serves a burgeoning suburban area and provides all clinical services including psychiatry. Each year 14,000 patients are admitted, over 3,000 babies delivered, 7,000 surgical operations performed, and 24,000 persons examined and treated in the Emergency Suite. GWU residents in Medicine, Surgery, and Obstetrics-Gynecology rotate to the Fairfax Hospital. The Hospital itself offers a rotating internship program, a School of Medical Technology, and clinical facilities for a School of Practical Nursing. Students of the GWU School of Medicine serve at the Hospital in clinical clerkship, continuing care, and elective programs.

*The Veterans Administration Hospital.*—This new 710-bed hospital which replaces the Mt. Alto Veterans Administration Hospital and the Veterans Administration Outpatient Clinic was opened in May, 1965.

In addition to the medical, surgical, psychiatric, neurological, tubercular, and physical medicine and rehabilitation services, there is a large outpatient program, an extensive medical research program, programs in open heart surgery, cobalt therapy, renal dialysis, a metabolic program, and a specially designed Administrative Research Laboratory.

The building is fully air conditioned and is equipped with many systems which facilitate the professional and support programs. Among these systems are remote dictation, pneumatic tube, materials handling conveyor, trayveyor food distribution, radio and program distribution to patient's bedside, medical gas, and suction system.

*The Washington Hospital Center.*—Opened in 1958, this 813-bed private, voluntary institution serves the greater Washington area through a triad of activities: patient care, teaching, and research. The Center is the tenth busiest of more than 7,000 hospitals in the United States and the second busiest private hospital in terms of inpatient admissions. A very active emergency service cares for more than 36,000 patients a year, and the 36 clinics provide all major clinical service except pediatrics for about 74,000 outpatients yearly. In addition to an extensive approved internship and residency program, the Center offers organized instruction for nurses, laboratory and X-ray technicians, medical secretaries, and other health related vocations.

## The Degree of Doctor of Medicine

### ENTRANCE REQUIREMENTS

A MINIMUM OF 90 SEMESTER hours must have been earned in an accredited institution of higher learning. Credits earned in a professional school can be applied to the fulfillment of this minimum requirement only if they are acceptable by the applicant's college or university toward a Bachelor's degree in Arts or Science. A credit under the quarter system is two-thirds of a semester hour.

It is advantageous to complete four full years of undergraduate work. Only exceptionally well qualified students can be accepted upon completion of the minimal requirements.

The following courses must be completed with satisfactory achievement before the applicant can be certified for matriculation. All required science courses must include sufficient laboratory work to give assurance of familiarity with the experimental methods and techniques of the disciplines.

1. **Biology:** 8 semester hours. This may be either in general biology or zoology but may *not* include separately credited courses in botany.

2. **Chemistry:** 8 semester hours of general inorganic chemistry (which may include qualitative analysis), and a one-year course, or the equivalent, in organic chemistry.

3. **Embryology:** 2 semester hours of vertebrate embryology. Under unusual circumstances, to be individually evaluated, this requirement may be met by a course in biology offering embryology as a substantial part of the course.

4. **English:** 6 semester hours in composition and literature. This may be the usual introductory college course or its equivalent.

5. **Physics:** 8 semester hours.

While not required for admission, a course in mathematics such as college algebra, trigonometry, or calculus is strongly recommended.

### ADMISSION PROCEDURE

CAREFUL ATTENTION should be given to the entrance requirements, supplying all the information asked for on the application and furnishing the School with all the required credentials. An applicant can not be considered until the following are received:

1. A fully completed *Application for Admission*.

2. Official transcripts of record from the registrar of *each* college, university, professional school, or other medical school attended—including summer sessions. Inclusion of transferred credits on a transcript will *not* serve in place of the transcript from the school where the credits were earned. Applicants currently in attendance should request official transcripts of record to date and send *supplemental transcripts* as soon as courses are completed and grades are recorded.

3. Letters of recommendation from the applicant's premedical advisory committee *or* from the references given in the application.

4. The results of the Medical College Admission Test, sponsored by the Association of American Medical Colleges. (Information concerning this test may be obtained from premedical advisers or The Psychological Corporation, 304 East 45th Street, New York, N.Y. 10017.)



5. A check or money order made out to the order of "The George Washington University" in the amount of \$15 to cover the cost of evaluating credentials.

#### ADVANCED STANDING

The School of Medicine's curriculum is such that admission with advanced standing is ordinarily limited to the third year. Applicants for admission to the second year will be considered in exceptional circumstances. The applicant must:

1. Be or have been a regularly registered student in a school of medicine which is a member or an affiliate member of the Association of American Medical Colleges.
2. Be in good standing and eligible to continue in the school where he is currently enrolled, or eligible to reenter that school if his education has been interrupted.
3. Have completed a course of study at least equivalent to that required for advancement to the year for which he is applying had he been a student in The George Washington University School of Medicine. For admission to the second year, he must have completed all work in anatomy, biochemistry, microbiology, and physiology.
4. Have the endorsement of the dean of his school of medicine or his authorized delegate.
5. Pass Part I of the National Board Examinations if he is applying for admission to the third year. He should plan to take the examination in June of the year in which he wishes to enter.

The application procedures are otherwise the same as those given under the general instructions for admission.

#### SELECTION PROCEDURES

The Committee on Admissions reviews credentials as soon as they are complete. The Committee is guided in the selection of students by the applicant's academic ability, the results of the Medical College Admission Test, and personal qualifications as determined by letters of reference and personal interview. Applicants are interviewed on invitation by the Committee. The applicant who is invited to an interview should make every effort to keep the appointment or let the School know promptly if another arrangement must be made. The interviewer's report is an essential part of the applicant's record. The Committee on Admissions will not make a final recommendation until it has been received.

Each applicant is notified of the Committee's decision as soon as possible.

An applicant who is offered a place in a class is required, within two weeks, to notify the Office of Admissions of the School of Medicine of his intent to accept the place reserved for him. A deposit of \$100 must be remitted not later than January 15th prior to the opening of classes of the academic year for which he applied. This deposit will not be refunded after January 15th. It will be credited toward the tuition for the first semester.

Accompanying the offer of a place in class will be forms for a report on physical condition. This report must be completed and returned to the Office of Admissions of the School of Medicine by the student's physician within two months of receipt of the letter of acceptance.



All questions related to admissions, requests for applications, or the mailing of applications and credentials should be addressed to: Office of Admissions, The George Washington University School of Medicine, 1331 H Street NW., Washington, D.C. 20005.

## REGISTRATION

FOR THE FALL SEMESTER OF THE ACADEMIC YEAR 1966-67, registration will be conducted at the Medical Research Building, 1339 H Street NW., from 9:00 A.M. to 4:00 P.M., September 8. The time and place of registration for the spring semester, and the summer session of third-year clerkships, will be announced.

## FEES AND FINANCIAL REGULATIONS

FEES ARE ESTABLISHED ANNUALLY by the Board of Trustees. The following fees and financial regulations adopted for the academic year 1965-66 are subject to change in subsequent years.

Application fee .....	\$15
Tuition fee, for each academic year .....	1,600
Fee for special examinations, for each subject .....	5
Continuous Registration fee, charged each student granted "leave of absence" status for the academic year in the School of Medicine .....	50
Graduation fee .....	25

## PAYMENT OF FEES

The annual fee of \$1,600 is payable at the rate of \$800 on or before registration day for each semester. Students registered for the summer session of third-year clerkships will be on "continuous registration" without charge until the following fall semester.

All fees are payable at the Office of the Cashier of the University, 725 21st Street NW., except as some other arrangement may be announced. While tuition is due and payable in full as described above, a student may sign a contract with the Office of the Cashier at the time of registration permitting him to pay one-half of the semester fee at the time of registration and the remaining half on or before November 2, 1966 (for the fall semester) and March 15, 1967 for the spring semester. A service fee of \$5 is charged for the use of this deferred payment plan. The University will not obligate itself to notify the student, in advance, of the payment-due date for the second half of the semester charges. Students who fail to make any payment when due will be automatically suspended. They may not attend classes until they have paid all accrued fees and a \$10 reinstatement fee and have been officially reinstated by the Office of the Cashier. Applications for reinstatement are to be made to the Office of the Cashier.

After a student has entered the course of instruction he is obligated for the tuition for the full semester. A student registered for the clerkships of the summer session is obligated for tuition due at the time of registration for the following fall semester except that, in the case of withdrawal or leave of absence a *pro rata* payment will become due immediately.

Acceptance by the University of a student's fees does not in any way obligate the School of Medicine to accept the student for any sub-

sequent semester or summer session and the right is reserved to require the withdrawal of any student whenever, in the interest of the student or the School, the Faculty deems it advisable to do so.

#### **COST OF TEXTBOOKS AND STUDENT EQUIPMENT**

The minimum cost of necessary textbooks and student equipment (microscope, drawing materials, glass slides, clinical thermometer, stethoscope, hemocytometer, uniforms, etc.) is approximately as follows: first year, \$600; second year, \$275; third year, \$150; and fourth year, \$100. The total is about \$1,125. Microscopes must be provided by the student. Rentals are not available.

Because many parents may wish some option in meeting and financing all or part of the cost of a college education, the University offers educational loan plans through the Girard Trust Exchange Bank in Philadelphia, Pennsylvania; Funds for Education, Inc., Manchester, New Hampshire; and The Riggs National Bank, Washington, D. C.

Although similar in purpose, these plans vary somewhat in coverage and conditions. One year and multiple year plans are available. Insurance covering the life and health of the sponsor is provided through these plans.

Individuals over twenty-one years of age who are employed full-time are also eligible to apply. They may sponsor their own contracts, provided they meet the conditions specified by the plan for which they are applying.

Brochures and applications describing these three plans are available in the Office of the Vice President and Treasurer, The George Washington University, Washington, D.C. 20006.

### **DEGREE REQUIREMENTS**

#### **DOCTOR OF MEDICINE**

EVERY CANDIDATE FOR GRADUATION with the degree of Doctor of Medicine must have satisfactorily completed the requirements of the School of Medicine as described under "Plan of Instruction" on pages 9-11, including not less than four academic years of study as a matriculated student in Medicine. He must have completed all required courses and passed satisfactorily all prescribed examinations.

#### **HONORS**

A candidate who has completed the four-year medical course with a quality-point index of 3.50 or above, may be recommended by the Faculty for graduation "with distinction."

#### **COMBINED BACHELOR OF ARTS AND DOCTOR OF MEDICINE**

In order to be recommended for the degree of Bachelor of Arts, the candidate must complete at least 90 semester hours of prescribed college work (at least 30 hours and one year of residence must be completed in Columbian College of Arts and Sciences) and the first year of the medical curriculum. Upon satisfactory completion of the fourth year of the medical curriculum the student becomes eligible for the degree of Doctor of Medicine.

## COMBINED MASTER OF SCIENCE AND DOCTOR OF MEDICINE

Students in the School who wish to apply for the combined degrees of Master of Science and Doctor of Medicine must meet the requirements for admission to the graduate division of Columbian College of Arts and Sciences. They must be recommended by the chairman of the department and by the deans of Columbian College and the School of Medicine.

The Master of Science program consists of a minimum of 30 semester hours of credit. A maximum of 12 semester hours of credit for graduate level courses *completed as a part of the medical curriculum* (and not already applied toward the degree of Bachelor of Arts) will be allowed in fulfillment of the requirements of the Master of Science degree.

## MASTER OF ARTS, MASTER OF SCIENCE, AND DOCTOR OF PHILOSOPHY

The requirements for the degrees of Master of Arts, Master of Science, and Doctor of Philosophy are stated in the Undergraduate and Graduate Catalogue of the University, which is available at the Office of Admissions, The George Washington University, Washington, D.C. 20006.

## FINANCIAL AID

### FELLOWSHIPS AND SCHOLARSHIPS

THE FOLLOWING FELLOWSHIPS AND SCHOLARSHIPS are limited to students in the School of Medicine. Unless otherwise specified, inquiries should be directed to the Dean of the School of Medicine, The George Washington University, Washington, D.C. 20006.

### FELLOWSHIPS

*Samuel Jordan Graham Fellowship in Surgery (1961).*—By bequest, in memory of Judge and Mrs. Graham. The income from this fund, up to \$2,000, may be used to assist students who are pursuing postgraduate study or research, preferably in surgery, at the School of Medicine.

If no individual is conducting such work or deserving of the award, the income may be used to provide one or more scholarships (to cover tuition and other school expenses deemed appropriate) for undergraduate students in the School of Medicine. Application should be filed with the Chairman of the Department of Surgery not later than March 1.

*Robin Miller Research Fellowship (1953).*—A \$3,000 fellowship established by bequest of Mrs. Robin Miller for the study of cardiovascular diseases.

*United States Public Health Service Training Grants.*—Information concerning training grants in fields of the medical sciences is available at the Office of the Dean of the School of Medicine.



## SCHOLARSHIPS

Scholarships awarded to students in the School of Medicine are credited for the academic year unless otherwise specified. Each holder must carry a full schedule of academic work during the period for which the scholarship is awarded. Applicants should apply on prescribed forms which must be filed in the Office of the Associate Dean of the School of Medicine, 1335 H Street NW., Washington, D.C., not later than April 1 preceding the academic year for which the scholarship is to be awarded.

*Anonymous Scholarship Fund.*—Provides scholarship aid to students in the School of Medicine on the basis of financial need and scholarship.

*Anna Bartsch Hospital Intern Scholarship (1946).*—A partial scholarship established by Dr. Anna Bartsch-Dunne as a memorial to her mother. Awarded to a woman intern in the University Hospital.

*Anna Bartsch Medical Student Scholarship (1946).*—A partial scholarship established by Dr. Anna Bartsch-Dunne as a memorial to her mother. Awarded to a woman in the School of Medicine, "of outstanding scholarship, character, and promise, who intends to make the practice of medicine her life profession."

*Everett Lamont Bradley Scholarship (1954).*—A partial scholarship, by bequest of Alice R. H. Bradley in memory of her son, for a student in the School of Medicine.

*Dr. Edith SeVille Coale Scholarship (1965).*—Provided at the request of Dr. Coale for women in the School of Medicine. The scholarship will be administered by the Zonta Club of Washington. Application should be made to the Dean of the School of Medicine.

*Joseph Collins Foundation Scholarships.*—Available to medical school students upon application through the Office of the Dean of the School of Medicine.

*Robert Woods Johnson Scholarship Fund.*—Available to medical students upon application through the Office of the Dean of the School of Medicine.

*Ki-Wives of Washington Scholarship Fund.*—A tuition scholarship available to a student or students in the School of Medicine.

*The George Washington University Medical Alumni Scholarship (1965).*—One \$1,000 scholarship awarded to a student in each of the four classes of the School of Medicine, on the basis of financial need and scholarship.

*Medical Research Scholarships and Traineeships.*—For student participation in the research programs of the School of Medicine or special training in research methods. Research scholarships are ordinarily awarded for full-time activity during the summer months; research traineeships support part-time work during the academic year. Scholars are "matched" with members of the faculty in accordance with their mutual interests. Trainees are designated by the departments responsible for the programs. These programs have been sponsored by the

National Institutes of Health, the National Foundation, Lederle Laboratories, and Tobacco Industry Research Committee. In addition a number of research scholarships have been made available through the American Cancer Society Institutional grant and the Washington Heart Association.

*Chas. Pfizer Medical Scholarship Program (1962).*—Established to financially assist a student in the School of Medicine.

*Phi Delta Epsilon Scholarship (1965).*—Awarded annually to an undergraduate member of Phi Delta Epsilon for scholarship, leadership, and service.

*Gerald Pollin Scholarship (1963).*—Two partial scholarships established by Dan and Reba Pollin in memory of their son. Awarded annually to students, preferably in the third or fourth year of the School of Medicine, who have demonstrated special interest and proficiency in the science and study of Psychiatry.

*Linda Joy Pollin Scholarship (1963).*—A partial scholarship established by Dan and Reba Pollin in memory of their niece. Awarded to a woman student in the School of Medicine who intends to make the practice of medicine her life profession.

*David Perry Steinman Memorial Scholarship Fund (1960).*—Established by friends and classmates. Awarded annually to a sophomore in the School of Medicine on the basis of need and academic performance.

#### LOAN FUNDS

The following loan funds are available to students in the School of Medicine in accordance with the qualifications placed thereon by the donors. Unless otherwise indicated, inquiries should be directed to the Office of the Associate Dean of the School of Medicine.

*American Medical Association Medical Education Loan Guarantee Program.*—Available to medical school students (beyond the first year of medicine).

*Edith K. Carr Medical School Loan Fund.*—Established by Mrs. Carr for loans to students in the School of Medicine.

*The Health Professions Student Loan Programs.*—This fund is available to a full-time student pursuing a course of study leading to the degree of Doctor of Medicine. Interns, residents, students engaged in premedical or other professional training, students enrolled in programs of study other than those leading to the degree mentioned above, are not eligible for these loans.

A candidate must (1) be a citizen of the United States or have such immigration status and personal plans as to indicate that he intends to become a permanent resident of the United States, (2) be in need of the amount of the loan to be able to pursue his course of study, and (3) be in good standing with the School. Inquiries concerning deadlines and applications should be directed to the Dean of the School of Medicine.

*Joseph H. Himes Loan Fund.*—Available for loans to students in the School of Medicine.

*W. K. Kellogg Medical School Loan Fund.*—Established by W. K. Kellogg Foundation in Battle Creek, Michigan, for loans to students in the School of Medicine.

*Pfizer Medical School Loan Fund.*—Established by Chas. Pfizer & Co., Inc., for loans to students in the School of Medicine.

*School of Medicine Loan Fund.*—A fund established and supported by medical school students, available for loans to students in the School of Medicine.

*Sutherland Medical School Loan Fund.*—Established by Rose L. Sutherland for loans to students in the School of Medicine.

## PRIZES

*Allie S. Freed Prize (1957).*—Awarded annually to a member of the graduating class in the School of Medicine who has demonstrated exceptional proficiency in the field of preventive medicine.

*Alec Horwitz Prize (1959).*—A prize of \$100 awarded annually to a senior who has demonstrated exceptional proficiency in the field of surgery.

*Huron W. Lawson Prize (1957).*—A prize of \$100 established by Mrs. Lawson in memory of her husband, who was a distinguished member of the Medical Staff of the University, is presented annually to a member of the graduating class who has demonstrated exceptional proficiency in the field of obstetrics and gynecology.

*Julius S. Neviasser Prize in Orthopedic Surgery (1956).*—A prize of \$100 awarded annually to the senior in the School of Medicine who scores the highest grade in a written examination and clinical aspects of orthopedic surgery.

*John Ordronaux Prize.*—By bequest, \$150 awarded annually to the member of the graduating class of the School of Medicine who has the highest scholastic standing.

*William G. Schafhirt Prize.*—By bequest, \$200 awarded annually to the senior student in the School of Medicine for the best original essay or thesis on some medical subject of current public interest.

## REGULATIONS

### ATTENDANCE

A STUDENT IS NOT PERMITTED TO ATTEND CLASSES until registration has been completed and fees due have been paid. Regular attendance is required.



## GRADES

*A*—excellent; *B*—good; *C*—satisfactory; *D*—passing; *F*—failure; *CN*—condition; *I*—incomplete.

The grade *CN* (condition) is a temporary grade. It indicates a level of achievement requiring further assignment. If the student satisfactorily completes such further assignment, he is entitled to a permanent grade of *D*. If he does not remove the condition, a permanent grade of *F* is assigned.

The grade *I* (incomplete) is a temporary grade. It indicates that the required work of the course has not been completed for reasons acceptable to the Dean. An "incomplete" must be removed by arrangement with the department concerned before the student may advance to the work of the following year. The appropriate permanent grade is thereupon assigned.

A student receiving a grade of *CN* or *F* in any subject may not advance to the work of the following year until he has complied with such recommendations of the Committee on Scholarship as are approved by the Executive Faculty.

## QUALITY-POINT INDEX

For purposes of quantitative evaluation of academic performance a "quality-point" index is computed on the basis of *A*, four points; *B*, three points; *C*, two points; *D*, one point; and *F*, zero points.

## EXAMINATIONS

Examinations, which may be written, oral, or practical, will be held during and at the end of each semester.

All students in the School of Medicine are required to take Part I and Part II of the National Board Examinations.

## GRADUATION

*Application for Graduation.*—Application for a degree should be filed in the Office of the Registrar by February 28 of the senior year.

*Presence at Graduation.*—A candidate is required to be present at the graduation exercises unless written application for graduation *in absentia* is approved by the Dean.

## RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable.

## RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

## HEALTH SERVICES

THE HEALTH SERVICES STAFF assists students with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open from 9 A.M. to 5 P.M., Monday through Friday during the academic year and Summer Sessions, with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge. For night and week-end emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Services, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.

Medical privileges include: (1) three visits in any one illness by a member of the Health Services Staff, office or residence (District of Columbia); (2) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Services.\* All additional hospital charges for operating room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye refraction and provision of glasses; orthopedic examinations and application of cast or other appliance; laboratory and X-ray work; and surgical operations must be paid by the student.

This medical benefit applies only to illness or disability incurred while currently enrolled in the University. It does not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Services is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Services has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each semester; (5) hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the physical education departments.

## PHYSICAL EXAMINATIONS

All first-year students are required to have a comprehensive physical examination prior to admission to the School of Medicine. The students are informed of significant findings and advised regarding such

\* See rule 5 for exception.

measures as will tend to help them maintain a high standard of health.

In addition medical students benefit from the complete Tuberculosis Case Finding Program which the School maintains. Under this program all students receive tuberculin tests, X-ray examinations, and such special attention from chest specialists as is necessary to reduce to a minimum the dangers from tuberculosis. Students are immunized against those diseases for which proven prophylaxis exists.

### RESIDENCE HALLS

COMPLETE INFORMATION concerning the University's residence halls is available at the Office of the Dean of Men or the Office of the Dean of Women, The George Washington University, Washington, D.C. 20006.

Information concerning off-campus housing may be obtained at the Office of the Dean. The reservation of rooms in private houses must be made by students.

### HONOR SOCIETIES

*Alpha Omega Alpha*.—National Honor Medical Society. Members of the Junior and Senior classes meeting the qualifications specified by the constitution of the Society are eligible for election to membership.

*William Beaumont Medical Society*.—Medical students showing unusual ability for medical writing and research are elected by the active members of this society.

*Howard Kane-A. F. A. King Obstetrical Society*.—The fifteen students in the third and fourth year classes who maintain the highest grades in their work in obstetrics are eligible for membership.

*Smith-Reed-Russell Society*.—Students of the third and fourth years who maintain a quality-point index of 3.30 or higher are eligible for membership.

### RECREATION

THE NATION'S CAPITAL provides abundant recreational resources, a large number of which are available at little or no cost. There are numerous art galleries, museums, concert halls, theaters, swimming pools, parks, and places of great historic interest. There are, in addition, the usual commercial recreation facilities found in a large city. Social activities are provided by student organizations of the University, the School of Medicine, and University sponsored programs such as intramural sports, concerts, recitals, and dramatic productions. Almost every religious faith is represented in Washington by one or more churches, and much spiritual, educational, social, and recreational activity is conducted by the various church groups. There are many other cultural and educational facilities in Washington to meet almost any possible individual need or preference of a medical student and his family.



## The University Hospital

THE MEDICAL STAFF consists of the following groups: Emeritus, Honorary, University, and Courtesy.

Physicians on the faculty and staff of instruction of the School of Medicine are eligible for appointments to the University Hospital staff. The Administrator of the Hospital and the Director of Nursing are ex-officio members.

### OFFICE OF THE MEDICAL DIRECTOR

Clayton Bernard Ethridge, M.D., *Medical Director*  
Alvin Edward Parrish, M.D., *Director of Clinical Research*  
Bertle Nelson, A.B., M.D., *Secretary of the Medical Staff*  
Margaret Newton Giberson, *Secretary, Office of the Medical Director*

### DEPARTMENTS AND SECTIONS

Department of Anesthesiology: Charles Seymour Coakley, M.D.,  
*Chief*  
Department of Medicine: Thomas McPherson Brown, A.B., M.D.,  
*Chief*  
Heart Station: John McCallum Evans, A.B., M.D., *Director*  
Section of Allergy: Halla Brown, M.D., *Chairman*  
Section of Cardiology: John McCallum Evans, A.B., M.D., *Chairman*  
Section of Dermatology: Robert Sexton Higdon, B.S., M.D., *Chairman*  
Section of Gastroenterology: Thomas Stone Sappington, A.B.,  
M.D., *Chairman*  
Section of Hematology: Jack Jacob Rheingold, A.B., M.D., *Chairman*  
Section of Infectious Diseases: Monroe James Romansky, A.B.,  
M.D., *Chairman*  
Section of Internal Medicine: Mary Falorsi Watt, M.D., *Chairman*  
Section of Metabolic Diseases: Louis Katz Alpert, M.D., *Chairman*  
Section of Pulmonary Diseases: James Joseph Feffer, A.B., M.D.,  
*Chairman*  
Department of Neurology and Neurological Surgery: James Winston  
Watts, M.D., *Chief*  
Electroencephalographic Laboratory: Harold Stevens, Ph.D., M.D.,  
*Director*  
Department of Obstetrics and Gynecology: Robert Henry Barter, B.S.,  
M.D., *Chief*  
Department of Ophthalmology: John William McTigue, A.B., M.D.,  
*Chief*  
Department of Pathology and Clinical Pathology: Thomas Martin  
Peery, A.B., M.D., *Chief*  
Department of Pediatrics: William Allen Howard, A.B., M.D., *Chief*  
Department of Physical Medicine and Rehabilitation: Charles Samuel  
Wise, B.S., M.D., *Chief*  
Department of Preventive Medicine and Community Health: Clarence  
Richard Hartman, A.B., M.D., *Acting Chief*  
Department of Psychiatry: Leon Yochelson, A.B., M.D., *Chief*  
Department of Radiology: William Woodrow Stanbro, M.D., *Chief*

Department of Surgery: Brian Blades, A.B., M.D., *Chief*  
 Section of General Surgery: Brian Blades, A.B., M.D., *Chairman*  
 Section of Oral Surgery: Sterling Garrett Mead, D.D.S., *Chairman*  
 Section of Orthopedics: John Pletch Adams, B.S., M.D., *Chairman*  
 Section of Otorhinolaryngology: James Jerry McFarland, Jr., B.S.,  
 M.D., *Chairman*  
 Section of Plastic Surgery: Gordon Sparks Letterman, B.S., M.D.,  
*Chairman*  
 Section of Urology: Leon Richard Culbertson, B.S., M.D., *Chair-*  
*man*  
 University Clinics: Robert Sexton Higdon, B.S., M.D., *Director*  
 Cancer Clinic: Calvin Trexler Klopp, A.B., M.D., *Director*  
 Nursing: Margaret Ruth Emanuel, R.N., A.M., *Director*

#### ADMINISTRATIVE STAFF

##### OFFICE OF THE ADMINISTRATOR

Victor Frederick Ludewig, B.S., *Administrator*  
 Fred Augustus Menk, *Associate Administrator*  
 Raleigh Cline, M.B.A., *Assistant Administrator*  
 Raymond Francis Whitehair, *Administrative Assistant*  
 Richard LeRoy Stensrud, A.B., *Administrative Assistant*  
 Jeanne Simon Swope, A.B., *Secretary, Office of the Administrator*  
 Sadie Estelle Jennings, *Chief, Admitting Office*  
 Donald Knox Hames, B.S. in B.A., *Assistant Comptroller*  
 Robert Hamilton Thompson, B.S., *Director of Food Service*  
 Joanne Louise Styer, B.S., *Chief Therapeutic Dietitian*  
 Lloyd Lionel Prescott, *Manager, Housekeeping Department*  
 Frank Leonard Sasher, *Manager, Linen Service*  
 Madeline Lenora Brown, R.R.L., A.B., *Medical Record Librarian*  
 Margaret Ruth Emanuel, R.N., A.M., *Director of Nursing*  
 Louise O'Neal, R.N., A.B., *Assistant Director of Nursing*  
 Melvin Bryant Shivar, *Administrative Assistant, University Clinics*  
 Franklin Dero Cooper, M.S., *Chief Pharmacist*  
 Molly Baker, *Chief Telephone Operator*

#### GENERAL INFORMATION

The George Washington University Hospital is a modern teaching facility for students of the School of Medicine and House Staff. Annual admissions number approximately 20,000; clinic visits are about 40,000 a year. The University Hospital is on Pennsylvania Avenue at Washington Circle. It is fully approved by the American Medical Association, the American Hospital Association, the American College of Surgeons, and the Joint Commission for the Accreditation of Hospitals.

The opening of a new six-floor addition to the University Hospital is scheduled for early 1966. This will be followed by remodeling and renovation of the present Hospital building. When this portion of the program is completed, the University Hospital will have 550 beds for inpatient use. It will be entirely air conditioned and will have a new operating suite, enlarged X-ray, laboratory, and physical medicine departments, as well as all of the latest diagnostic and supporting facilities. Especially designed teaching and conference areas will be located throughout the building. Included will be a floor in the new pavilion devoted exclusively to clinical research activities.

The Council on Medical Education and Hospitals of the American Medical Association and the various specialty boards have approved the University Hospital for residency training in anesthesiology, cardiac disease, internal medicine, neurological surgery, obstetrics-gynecology, ophthalmology, orthopedic surgery, pathology, physical medicine and rehabilitation, plastic surgery, psychiatry, radiology, surgery, thoracic surgery, and urology. In addition, it has straight internships in medicine, and surgery.

Junior and senior students of the School of Medicine are assigned to the University Hospital, as clinical clerks and in the University Clinics. Regular conferences for students, house staff, and attending physicians are held.

The George Washington University Cancer Clinic, housed in the nearby Helen L. and Mary E. Warwick Memorial Building is part of the University Hospital clinical facilities. Cancer detection and chemotherapeutic and follow-up care, including a supervised home-care program, are among the activities of the Clinic. Approximately 2,500 new patients are seen in the Cancer Clinic each year. Excellent research laboratories form an important part of this facility. The Clinic has been approved by the American College of Surgeons.

Other major teaching activities include a residency program in hospital administration; close affiliation with the University's graduate program in hospital administration; programs in Medical Technology leading to the Bachelor of Science degree as well as to a certificate; and an affiliation for the training of practical nurses.

The Hospital has an excellent branch medical library. The House Staff can also arrange to use libraries of the School of Medicine and the University and the outstanding city and federal libraries and record collections.

#### INTERN PROGRAMS

Straight internships are available in Medicine and Surgery.

#### RESIDENT PROGRAMS

Sixty-six approved residencies are offered in anesthesiology, cardiac diseases, internal medicine, neurologic surgery, obstetrics-gynecology, ophthalmology, orthopedic surgery, pathology, physical medicine, plastic surgery, psychiatry, roentgenology, surgery, thoracic surgery, and urology. Residency programs are from one to four years in duration, depending upon the service. Residents in the University Hospital also receive appointments as members of the faculty of the School of Medicine with active teaching responsibilities.

#### FELLOWSHIP PROGRAMS

Fellowships, through the School of Medicine, of one or two years are available in allergy, anesthesiology, cardiology, chest diseases, gastroenterology, hematology, infectious diseases, metabolic diseases, oncology, pediatrics, physical medicine, renal diseases, rheumatic diseases, surgery, thoracic surgery, and University Clinics.

All appointments are for one year with the privilege of applying for continuation on the House Staff. In several of the intern, residency, and fellowship programs, excellent affiliations are maintained with local and governmental hospitals. Inquiries and applications for intern-



ships and residencies should be addressed to the Chief of the Department or to the Medical Director; the George Washington University Hospital, 901 23rd Street, NW., Washington, D. C. 20037.

Information relative to fellowships may be obtained from the Chief of the Department concerned or from the Director of Postgraduate Medical Education, in care of the Hospital.

#### MEDICAL TECHNOLOGY COURSE

This course is open to candidates for the degree of Bachelor of Science in Medical Technology, offered by Columbian College of Arts and Sciences, and to the other applicants meeting the requirements of the Registry of Medical Technologists of the American Society of Clinical Pathologists. These requirements, fully satisfied by the Columbian College program, consist of 3 years (90 semester hours or 135 quarter hours) of college work in any college or university accredited by a recognized standardizing association, including certain specific courses in the science field. The specific science requirements are as follows: *Chemistry*—a minimum of 4 semesters or 6 quarters (16 semester hours or 24 quarter hours) of studies acceptable toward a major in chemistry and including lecture and laboratory; *Biologic Sciences*—a minimum of 4 semesters or 6 quarters (16 semester hours or 24 quarter hours) of studies acceptable toward a major in biologic science and including lecture and laboratory; *Mathematics*—a minimum of 3 semester hours or 4 quarter hours of college mathematics.

For students enrolled in Columbian College of Arts and Sciences as candidates for the degree of Bachelor of Science in Medical Technology, the Medical Technology Course constitutes the final (fourth) year of qualification for the degree.

In the case of those who have taken their prerequisite work in some other college or university, satisfactory completion of the Medical Technology Course will not satisfy the requirements for the degree from Columbian College.

The Medical Technology Course consists of 12 months of didactic and practical work in clinical laboratory procedures, offered by the Department of Pathology in the University Hospital. Students ordinarily begin this course with the fall semester, but under exceptional circumstances may begin at other times.

A limited number of scholarships are provided by the University Hospital for students enrolled in the fourth year of the degree program. All students in this fourth year must provide themselves with uniforms; laundry of uniforms is provided by the University Hospital. A cash allowance of \$65 a month is granted during the last 6 months of the fourth year in training.

Upon satisfactory completion of the course a certificate is awarded and the candidate is eligible for the national certifying examination given by the Registry of Medical Technologists.

Enrollment in the Medical Technology Course is strictly limited so that personal instruction can be given. Acceptance to the Columbian College degree program does not necessarily assure acceptance into the Hospital program. Inquiry about this course should be sent directly to the Department of Pathology, The George Washington University Hospital, Washington, D. C. 20037.

## Alumni and Allied Associations

### THE GENERAL ALUMNI ASSOCIATION

THE OBJECTIVES OF THIS ASSOCIATION are to unite graduates who wish to associate themselves for charitable, educational, literary, and scientific purposes, and promote the general welfare of the University.

Eligible members are those who have matriculated in any school of the University and left the University in good standing, or any person who is or has been a member of the teaching, research, or administrative staff of the University, or of the Board of Trustees of the University. Active members are those eligible members who are current contributors to or life members of The George Washington University General Alumni Association, the Alumni Association of any school of the University, or contributors to the Annual Support Program.

The Alumni Office is in Bacon Hall, 2000 H Street NW., Washington, D.C. 20006. All alumni are urged to keep the Alumni Office informed of changes of address or occupation and to supply information with regard to their fellow alumni.

### THE GEORGE WASHINGTON UNIVERSITY MEDICAL ALUMNI ASSOCIATION

THE GEORGE WASHINGTON UNIVERSITY MEDICAL ALUMNI ASSOCIATION incorporated in 1959, continues the organization previously known as The George Washington University Medical Society.

The stated purposes of the Association are as follows: "This shall be a nonprofit organization international in scope, whose objectives shall be to provide constructive services for the alumni of The George Washington University School of Medicine, for furthering the art and science of medicine, research, and for the promotion of the welfare of The George Washington University School of Medicine, its students, The George Washington University Hospital and its trainees."

Active membership in the Association consists of: all graduates of the School of Medicine; current members and, on application, past members of the teaching staff of the School of Medicine who hold Doctor's degrees; Doctors of Medicine who have had one or more years of postgraduate training in The George Washington University Hospital. Junior membership consists of all members of the student body of the School of Medicine during the time they are students.

The Medical Alumni Association maintains an office in the School of Medicine Building at 1335 H Street NW., Washington, D. C.

### OFFICERS OF THE ASSOCIATION FOR THE YEAR 1965-1966

*President.*—Richard E. Palmer, A.B., M.D. 1944

*President Elect.*—George Speck, M.D. 1941

*First Vice President.*—Jerome H. Epstein, A.M. 1948, M.D. 1953

*Second Vice President.*—William Brainin, A.B. 1931, M.D. 1934

*Secretary.*—James Dusbabek, M.D. 1934

*Treasurer.*—Jack B. Kleh, A.B. 1942, M.D. 1944

*Councilman for Three-year Term Ending 1968:*

Ernest A. Gould, M.D. 1939; Frederick Y. Donn, Jr., M.D. 1941

*Councilman for Two-year Term Ending 1967:*

Richard M. Huffman, M.D. 1955

## COURSES OF INSTRUCTION

ON THE FOLLOWING PAGES of this CATALOGUE, are listed the courses of instruction offered by the School of Medicine. The School of Medicine serves other divisions of the University by making available to nonmedical students certain undergraduate and graduate courses in the following fields: Anatomy, Biochemistry, Microbiology, Pathology, Pharmacology, Physical Medicine and Rehabilitation, Physiology, and Preventive Medicine and Community Health. The courses listed are subject to some slight change. The University reserves the right to withdraw any course announced.

### EXPLANATION OF COURSE NUMBERS AND SYMBOLS

A number in parentheses after the name of a course indicates number of semester hours of credit which may be earned.

Courses numbered from 1 to 100 are for first- and second-year Arts and Science students. Those numbered from 101 to 200 are for third- and fourth-year Arts and Science students.

Courses in the basic science departments are numbered from 201 to 300. They are for medical students and graduate students in the Arts and Sciences.

Courses in the clinical departments are numbered from 301 to 400. They are limited to medical students.

### Anatomy\*

*Professors* I.R. Telford (*Chairman*), Paul Calabrisi

*Professorial Lecturers* T.D. Stewart, J.L. Angel

*Associate Professors* F.D. Allan, T.N. Johnson, J.B. Christensen

*Assistant Professors* J.C. Bartone, H.E. Kaiser

*Assistant Clinical Professor* R.N. Brown

*Assistant Professorial Lecturers* L.E. Church, Stanley Jacobson

† 201 **Anatomy (12)** The Staff

A correlated laboratory and lecture course on human anatomy. All of the anatomical disciplines are integrated: regional gross dissection, histology, neuroanatomy, and embryology. For medical students and qualified graduate students. Laboratory fee for nonmedical students, \$56. (Fall)

\* Staff of Instruction for the academic year 1965-66.

† Required course for medical students.



- 202 **Gross Anatomy (6)** Calabrisi and Staff  
Regional dissections of an adult cadaver supplemented with lectures and X-rays. For qualified graduate students. Laboratory fee for nonmedical students, \$30. (Fall)
- 203 **Human Embryology (1)** Allan  
A lecture course on the origin and development of the human body. Special emphasis on the value of embryology in interpreting anatomical anomalies. For qualified graduate students. (Fall)
- 204 **Neuroanatomy (2)** Johnson and Staff  
A lecture and laboratory course on the gross and microscopic anatomy of the central nervous system and special senses. For qualified graduate students. Laboratory fee for nonmedical students, \$13. (Fall)
- 205 **Microscopic Anatomy (3)** Telford and Staff  
Lecture and laboratory course on the microscopic structure of cells, tissues, and organs of the human body. For qualified graduate students. Laboratory fee for nonmedical students, \$13. (Fall)
- 221-22 **Seminar (1-1)** Telford and Staff  
Research reports and discussions of special topics by the staff and graduate students. For graduate students. Medical students are encouraged to attend. 1 hour a week—as arranged. (Academic year)
- 252 **Physical Anthropology (1)** Stewart, Angel  
Variations in man and factors affecting him. Human evolution and racial differences. Anatomy and culture of ancient man. (Spring)
- 254 **Fetal Anatomy (2)** Allan  
Dissection of an early and a late human fetus. Comparison of fetal and adult structures. Limited to 20 students. Laboratory fee for nonmedical students, \$10. (Spring)
- 256 **Human Genetics (1)** Jacobson  
Lectures covering general principles of genetics, new cytogenetics techniques, aneuploidy in man and its significance, biochemical aspects of heredity, and genetic counseling. (Spring)
- 260 **Gross Anatomy of Upper Extremity (2)** Calabrisi, Christensen  
Detailed dissection of the region, supplemented by X-ray anatomy; discussions and assigned reading. Limited to 12 students. Laboratory fee for nonmedical students, \$10. (Spring)
- 262 **Gross Anatomy of Lower Extremity (2)** Calabrisi, Christensen  
Detailed dissection of the region, supplemented by X-ray anatomy; discussions and assigned reading. Limited to 12 students. Laboratory fee for nonmedical students, \$10. (Spring)
- 264 **Gross Anatomy of Head and Neck (2)** Calabrisi, Christensen  
Detailed dissection of the region, supplemented by X-ray anatomy; discussions and assigned reading. Limited to 12 students. Laboratory fee for nonmedical students, \$10. (Spring)
- 266 **Gross Anatomy of Thorax and Abdomen (2)** Calabrisi, Christensen  
Detailed dissection of the region, supplemented by X-ray anatomy; discussions and assigned reading. Limited to 12 students. Laboratory fee for nonmedical students, \$10. (Spring)

- 268 **Gross Anatomy of Pelvis and Perineum (2)** Calabrisi, Christensen  
Detailed dissection of the region, supplemented by X-ray anatomy; discussions and assigned reading. Limited to 12 students. Laboratory fee for nonmedical students, \$10. (Spring)
- 270 **Dissection of the Human Brain (1)** Johnson  
Dissection of the major pathways and nuclei of the brain with consideration of the ventricular system. Conferences and assigned reading. Limited to 20 students. Laboratory fee for nonmedical students, \$10. (Spring)
- 272 **Autonomic Nervous System (1)** Allan  
Lectures on the development, microscopic and gross anatomy, and function of central and peripheral components of the autonomic nervous system. (Spring)
- 274 **Tissues of the Body (1)** Telford  
Lectures on basic concepts in anatomy, with special emphasis on the primary tissues of the body—their histogenesis, growth functions, regenerative capacities, aging, and death. (Spring)
- 276 **Microscopic Research Techniques (1)** Bartone  
Various histological and histochemical methods of research. Techniques in the preparation of tissues for microscopic observation. Students will select specific tissues or organs for individual study and do medical literature research. Limited to 12 students. Laboratory fee for nonmedical students, \$10. (Spring)
- 280 **Regional Anatomy (5 or 10)** Calabrisi, Christensen  
Advanced dissection of any region of the body. Limited to 4 junior or senior medical students for one or two months during any elective period. (Spring)
- 281 **Neonatal Anatomy (5)** Allan  
Detailed dissection of the newborn or late fetus. Limited to 4 junior or senior medical students for one month during any elective period. (Spring)
- 282 **Advanced Neuroanatomy (5)** Johnson  
Detailed dissection of human adult brain. Limited to 4 junior or senior medical students for one month during any elective period. (Spring)
- 283 **Introduction to Neuroanatomical Research (5)** Johnson  
Techniques and principles of research in neuroanatomy. Limited to 2 junior medical students for one month during any elective period. (Spring)
- 284 **Experimental Teratology (10)** Telford  
A study of congenital abnormalities in animals induced by various experimental methods. Limited to 2 junior medical students for two months during any elective period. (Spring)
- 285 **Medical Histochemistry (5 or 10)** Bartone  
Histochemical methods as applied to adult, fetal, and embryonic tissues. Individual or group projects available. Limited to 5 junior or senior medical students for one or two months during any elective period. (Spring)
- 286 **Microangiography and Microradiography (5)** Christensen  
Study of the intimate vasculature of selected organs by injection and radiography. Limited to 2 junior medical students for one month during any elective period. (Spring)
- 287 **Human Cytogenetics (10)** Jacobson  
Preparation of blood cultures, harvesting of cells during mitosis, and deter-

mination of various karyotypes in normal and abnormal individuals. Limited to 2 junior medical students for two months during any elective period. (Spring)

- |         |                                     |           |
|---------|-------------------------------------|-----------|
| 295-96  | <b>Research</b> (arr.)              | The Staff |
|         | Fee to be arranged. (Academic year) |           |
| 299-300 | <b>Thesis</b> (3-3)                 | The Staff |

## Anesthesiology\*

*Professors* C.S. Coakley (*Chairman*), Seymour Alpert

*Clinical Professor* D.H. Stubbs

*Associate Professor* Paula Kaiser

*Assistant Professors* Helene Werner, K.H. Hanson, Patricia Russell, B.S. Epstein, Arthur Peschin, Marie-Louise Levy

*Assistant Clinical Professors* S.N. Albert, Maria Benzinger

*Instructors* Alice Altstatt, W.T. Wong

*Clinical Instructors* W.E. Bageant, Allen Widome, E.J. Dealy

- |       |   |           |
|-------|---|-----------|
| † 301 | <b>Anesthesiology</b> (1)   | The Staff |
|       | The fundamentals of anesthesia are reviewed and correlated with other medical specialties. (Fall)   |           |
| 380   | <b>Anesthesiology</b> (5)   | Coakley   |
|       | Clinical experience in preoperative evaluation, surgical and obstetrical anesthesia, infant and adult resuscitation, inhalation therapy; blood volume and blood gas determinations. University Hospital |           |
| 381   | <b>Anesthesiology</b> (5)   | Bageant   |
|       | Clinical experience in preoperative evaluation, surgical and obstetrical anesthesia, infant and adult resuscitation; inhalation therapy; blood volume determinations. Washington Hospital Center        |           |
| 382   | <b>Clinical Anesthesia</b> (5)  | Dealy     |
|       | Clinical experience in surgical anesthesia and resuscitation. V.A. Hospital   |           |
| 383   | <b>Clinical Anesthesia</b> (10)   | Benzinger |
|       | Clinical experience in preoperative evaluation; surgical, obstetrical, and pediatric anesthesia; and resuscitation. D.C. General Hospital   |           |

## Biochemistry\*

*Professor* C.R. Treadwell (*Chairman*)

*Professorial Lecturers* W.R. Carroll, Arthur Weissbach, Sidney Udenfriend, C.A. Kuether, W.W. Burr, Jr., R.W. Albers, R.O. Brady, Jr., C.J. Epstein

\* Staff of Instruction for the academic year 1965-66.

† Required course for medical students.



*Associate Professors* B.W. Smith, G.V. Valhouny, J.M. Bailey

*Assistant Professor* A.S. Brecher

*Special Lecturers* Walter Mertz, Herbert Weissbach

- \* 201 **Medical Biochemistry** (8) The Staff  
A lecture and laboratory course for medical students. Emphasis is on basic principles and their relation to medicine. (Fall)
- 221-22 **General Biochemistry** (4-4) Vahouny  
A lecture and laboratory course for nonmedical students. Prerequisite: Chemistry 152. Material fee for nonmedical students, \$20 a semester. (Academic year)
- 224 **Biochemistry of the Enzymes** (1) A. Weissbach  
Lecture course dealing with the biochemistry of the enzymes and enzyme reactions. Prerequisite: Biochemistry 221. (1966-67 and alternate years—spring)
- 225-26 **Biochemical Procedures** (3-3) Smith and Staff  
A laboratory course. Material fee for nonmedical students, \$16 a semester. (Academic year)
- 227-28 **Biochemistry Seminar** (1-1) The Staff  
The current literature in the field of biochemistry, mainly for graduate students, but open to a limited number of specially qualified medical students. (Academic year)
- 232 **Proteins and Amino Acids** (1) Carroll  
A lecture course. Prerequisite: Biochemistry 221. (Spring)
- 241 **Isotopes** (3) Burr  
Theoretical characterization of isotopes and their applications in biology. Attention will be given to counting, health physics and radiation safety, autoradiography and chromatography. Laboratory fee for nonmedical students, \$16. (Spring)
- 251 **Carbohydrate Metabolism** (1) A. Weissbach  
A lecture course. Prerequisite: Biochemistry 201 or 222. (1967-68 and alternate years—spring)
- 252 **Biochemistry of the Brain** (1) Albers, Brady  
Primarily for medical students; open to a limited number of graduate students. Recent biochemical developments in structure, functions, and metabolic processes unique to the brain. (Spring)
- 254 **Human Nutrition** (1) Pollack  
Primarily for medical students; open to a limited number of graduate students. Application of nutritional principles in humans. (Spring)
- 256 **Biochemistry of Organ Function** (1) Kramer  
Primarily for medical students; open to a limited number of graduate students. Emphasis on biochemical processes unique to particular organ systems and the application of these processes to the evaluation of function. (Spring)
- 258 **Inherited Metabolic Diseases** (1) Epstein  
Primarily for medical students; open to a limited number of graduate

\* Required course for medical students. Open to qualified graduate students.

students. A series of lectures on the contribution of molecular biology to the understanding of human mutations and hereditary diseases. Specific disease states and the genetics of protein structure will be discussed. Prerequisite: Biochemistry 222. (Spring)

**262 Biochemistry of the Lipids (1)** Vahouny

Primarily for graduate students but open to a maximum of 15 medical students. 1966-67 and alternate years: lectures on metabolism of lipids, including digestion, energy production, biosynthesis, and function in specialized tissues and subcellular structures. 1967-68 and alternate years: lectures on chemistry, properties, and occurrence of the important classes of biological lipids. Research techniques for the study of lipid biochemistry are considered. This course may be repeated once for credit. (Spring)

**264 Carbohydrate Metabolism (1)** A. Weissbach

A lecture course. Prerequisite: Biochemistry 222. (1967-68 and alternate years—spring.)

**280 Research in Virus-Tumor Interactions (10)** Bailey

Participation in research project.

**281 Research in Biochemistry of Carbohydrates and Enzymes (10)** Smith

Research in problem already under investigation in the Department or a project in related fields suggested by the student.

**282 Research in Biochemistry of Lipids (10)** Vahouny

Biochemical investigation of a clinical problem involving lipids of special interest to the student or participation in existing research program in the Department.

**295-96 Research in Biochemistry (arr.)** The Staff

(Academic year—as arranged.)

**299-300 Thesis (3-3)** Thé Staff

## Dermatology\*

*Professor R.S. Higdon (Chairman)*

*Professorial Lecturer Gerda Landman*

*Clinical Professor J.Q. Gant, Jr.*

*Associate Clinical Professor Hayden Kirby-Smith*

*Assistant Clinical Professors W.G. Ballinger, C.S. Brown, M.P. Landman, M.L. Elgart, L.E. Harman, Jr., W.R. Vineyard, D.J. Demis*

*Clinical Instructors P.L. Repetto, Jr., Phyllis Huene, D.E. Mitchell, L.J. Eanet, H.S. Golomb*

**† 301 Dermatology (1)** The Staff

Lectures on diseases of the skin. (Spring)

**† 302 Dermatology OPD (1)** Higdon

Lectures on the diagnosis and treatment of common dermatoses and tumors of the skin. University Hospital

\* Staff of Instruction for the academic year 1965-66.

† Required course for medical students.

**380 Dermatology Clinic (5)**

Harman

Teaching conferences, lectures, and attendance at Dermatology Clinic where patients with a wide variety of dermatoses are seen. Designed to acquaint student with the diagnosis and treatment of common disorders of the skin. Demonstration of dermatologic surgical procedures, technique for using liquid nitrogen, culture and identification of fungi, and microscopic diagnosis of common cutaneous diseases. Walter Reed General Hospital

**381 Dermatology Clinic (5)**

Elgart

Teaching conferences, lectures, and attendance at Dermatology Clinic where patients with a wide variety of dermatoses are seen. Designed to acquaint student with the diagnosis and treatment of common disorders of the skin. Demonstration of dermatologic surgical procedures, technique for using liquid nitrogen, culture and identification of fungi, and microscopic diagnosis of common cutaneous diseases. USAF Hospital

## Medicine\*

*Professors* T.M. Brown (*Chairman*), M.J. Romansky (*Associate Chairman*), L.K. Alpert, J.M. Evans, C.B. Ethridge, A.E. Parrish, F.W. Wolff

*Clinical Professors* T.W. Mattingly, A.G. Prandoni, Herbert Pollack, J.J. Feffer, Halla Brown, J.J. Rheingold, Irene Tamagna, T.S. Sappington

*Associate Professors* S.W. Bush, W.R. Felts, Jr., G.A. Kelser, Jr., E.A. Gombos, M.H. Jacobson, Irene Siu, R.C. Fowler, Ariel Hollinshead (*Research—Pharmacology*), Mary Watt, N.C. Kramer, Milton Corn, Rashid Massumi, H.E. Ticktin, J.P. Nasou, C.A. Caceres, J.A. Curcin

*Associate Clinical Professors* O.R. Farley, Janet Travell, A.E. Brigulio, J.F. Ney, J.W. Latimer, Jr., A.B. Rosenbaum, T.J. Abernethy, Benjamin Manchester, F.S. Bacon, R.A. Hines, L.E. Putnam, Elizabeth Hill, M.H. Stolar, S.J.N. Sugar, H.D. Ecker, C.W. Jones, C.W. Thompson, E.S. Gladsden, Maurice Mensh, F.J. Murray, E.P. Parker III, M.H. Rosenberg, J.W. DuChes, Milton Gusack, Jack Kleh, H.M. Silver, J.P. Mann, Edward Adelson, R.R. Belton, S.D. Loube, Arthur Ruskin, T.W. Sheehy, C.A. Rosenberg, J.R. Overman

*Assistant Professors* Juan Calatayud, H.W. Clark, Jr. (*Research—Biochemistry*), W.H. Whitmore, Jr., F.A. Peck, P.A. Gorman, K.L. Becher

*Assistant Clinical Professors* L.J. Thomas, W.O. Bailey, Jr., T.A. Gonder, Ruth Benedict, David Horwitz, L.S. Blumenthal, R.B. Castell, S.T. Gibson, Louis Ross, S.W. Kirstein, Israel Kessler, W.D. Brill, Marvin Fuchs, M.H. Rose, C.A. Schulman, Adolph Friedman, Alfred Baer, Herbert Abramson, J.H. Pert, Bertle Nelson, W.J. Schewe, Maurice Protas, R.B. Miller, Jack Orloff, J.B. Marbury, F.D. Chapman, L.H. Snyder, R.G. Taylor, J.W. Long, Virginia Beelar, J.F. Ambury, R.N. Coale, J.T. Burns, T.L. Hartman, Boris Rabkin, L.A. Craig, Jr., A.W. Danish, Alvin Seltzer, J.W. Walsh, C.E. Law, E.L. Rea, C.L. Gossels, H.O. Mott, J.H. Watson,

\* Staff of Instruction for the academic year 1965-66.



N.H. Rubenstein, G.W. Fisher, W.L. Stone III, B.H. Ostrow, C.D. Cooper, S.C. Pascoe, W.R. Ehrmantraut, G.A. Chapman, F.M. Gross, Eleanor Makel, S.M. Babin, Jr., Alice Brigham, Jack Crowell, D.S. Davis, J.H. Epstein, F.K. Harris II, R.F. Dyer, D.M. Tormey, E.H. Bauersfeld, William Lewis, E.J. Leonard, J.W. Roark, H.I. Passes, C.W. Foulke, A.A. Lear, O.W. Donnelly, R.S. Poole, H.C. Sadin, S.J. Talpers, W.L. Hall, George Sharpe, Raymond Scalett, T.R. Shworles (*Social Psychologist*), M.A. Sislen, C.J. Savarese, Jr., G.C. Buchanan, G.T. Economos, Irwin Ardum, S.W. Dejer, S.E. Barr, H.A. Moskovitz, J.T. Hagenbucher, G.N. Polis, H.C. Bates, Jr., W.F. Morrissey, R.A. Apter, M.S. Artenstein, J.E. Stauch (*Research*)

**Instructors** Karl Wipplinger, A.H. Blackman

**Clinical Instructors** Jeanne Bateman, B.R. Cooperman, J.C. Mandes, R.L. Howard, Audrey Connor, Margret McCabe, Sammie Belcher, A.W. McLaurin, Francis Chucker, G.E. Hurwitz, R.S. Wilkinson, W.E. Gallinek, L.H. Biben, W.H. Harvey, William Kurstin, N.K. Bohrer, R.J. Dobrow, N.G. Goodman, J.D. Herman, Sheldon Kress, Frederick Meyers, Lily Ruckstuhl, Charles Shilling, H.O. Schindelar, Paul Schlein, R.M. Kaufman, Andre Barrabini, S.W. Rosner, M.G. Sherer, E.F. Aune, Robert Kramer, L.H. Fenton, Frank Borsody, Richard Schoenfeld, M.J. Halberstam, D.W. Datlow, W.T. London, G.G. Kay, R.A. Fischer, J.D. Foulke, S.Z. Hirschman, M.L. Lenkin, W.T. Moore, F.J. Jarsen, Manuel Angoso-Dufourcq, P.W. Majerus, R.M. Huffman, E.B. Thompson, S.A. Lundberg, Florentino Palmon, H.R. Abel, S.G. Korenman, G.B. Cushner, C.B. Smith, Anne Ricks (*Social Work*), S.J. Conway

**Special Lecturers** A.D. Kistin, Sol Katz, R.W. Berliner, T.H. McGavack, P.D. Comanduras, W.L. Nalls, Roy Hertz, Albert Sjoerdsma, W.H. Crosby, Jr., D.S. Fredrickson, Pierre Tulou, T.J. Kennedy, Jr.

- \* 301 **Physical Diagnosis (4)** The Staff  
Covers not only theoretical but practical application of principles of physical diagnosis, including training with bed patients under individual instruction, designed to develop ability in examination of patients and case history taking. University, D.C. General, and affiliated hospitals as arranged. (Spring)
- \* 302 **Laboratory Medicine (2)** The Staff  
Conferences and studies in the clinical application of laboratory examinations of blood, body fluids, exudates, and excreta. (Spring)
- \* 303 **Principles of Internal Medicine (2)** The Staff  
Lectures, seminars, and conferences covering the principles and practice of internal medicine. (Fall)
- \* 304 **Major Clinical Situations (Medicine) (4)** The Staff  
Lectures and demonstrations on medical diagnosis and treatment.
- \* 305 **Inpatient Clerkship I (10)** The Staff  
Training in the comprehensive study of patients including history and physical examination; ward rounds, consultations, conferences, preceptorial teaching, and seminars. University, D. C. General, and Fairfax hospitals. (8 weeks)

• Required course for medical students.

- \* 306 **Inpatient Clerkship II (5)** The Staff  
An extension of Inpatient Clerkship I. (4 weeks)
- \* 307 **Outpatient Medicine (10)** The Staff  
Individual case studies under personal supervision of the Staff. Daily clinics on current medical problems and seminars stressing physiological aspects of diseases. Individual examinations and instructions in medical specialties. University Hospital (8 weeks)
- 370 **Inpatient Medicine (5)** Apter  
Full participation in diagnostic studies and clinical management of bed patients on the Medical Service. Regular teaching rounds and conferences are scheduled. Fairfax Hospital
- 371 **Arthritis and Rheumatic Diseases (5)** Felts  
Introduction to clinical problems in the diagnosis and treatment of arthritis and rheumatic diseases, review of clinical and research procedures employed in the laboratory.
- 372 **Clinical Renal Disease (5)** Parrish  
Participation in the clinical and laboratory procedures used in the study of renal disease at D. C. General and University hospitals; ward rounds, consultations, conferences, and seminars.
- 373 **Inpatient Medicine (5 or 10)** Romansky, Ticktin  
Participation in the comprehensive study of patients on The George Washington University Medical Service; ward rounds, consultations, seminars, and conferences. D. C. General Hospital
- 374 **Clinical Microbiology (5 or 10)** Romansky  
Study of clinical and laboratory problems in infectious diseases; participation in rounds, conferences, and seminars. D. C. General Hospital
- 375 **Studies in Hypertension (10)** Tamagna  
Participation in care of inpatients and outpatients and in current research projects.
- 376 **Total Patient Care (10)** Tamagna  
Participation in teamwork program for total patient care, including clinical and psychologic studies and rehabilitation; group conferences; research studies.
- 377 **Hepatic and Metabolic Diseases (5)** Ticktin  
Participation in clinical studies of patients with hepatic and pancreatic diseases, endoscopy, splenoportography, liver biopsy; research studies in enzymes and ammonia metabolism in hepatic diseases.
- 378 **Endocrinology and Cancer Chemotherapy (5)** Alpert  
Clinical and laboratory work with emphasis on either endocrinology (and metabolism) or cancer chemotherapy, depending on the student's choice.
- 379 **Clinical Biophysics (10)** Fowler  
Participation in research studies employing various physical and physico-chemical techniques in the study of collagen vascular diseases.
- 380 **Clinical Application of Tissue Immunology (5)** Kramer  
Application of immunologic methods to the study of human hypersensitivity states and metabolic diseases, study of serum proteins including protein hormones and enzymes, research principles and methods.

\* Required course for medical students.



- 381 Heart Disease and Electronics and Computers (10)** Caceres  
Survey and evaluation of instruments used for detection, diagnosis, and treatment of heart disease including electrocardiographs, phonocardiographs, and spirometry and telemetry equipment, etc. Students will become familiar with terminology and equipment used with digital computer analysis of ECG's and other physiologic signals. Students will become proficient in electrocardiography interpretation and analysis of respiratory curves and heart sounds. Participation in current projects with physicians, and opportunity for individual student research.
- 382 Clinical Cardiopulmonary Physiology (10)** Massumi  
Active participation in clinical studies of cardiac and pulmonary functions including electrocardiography, phonocardiography, cardiac catheterization, angiocardiology, and spirometry-blood gases; correlation with clinical signs and symptoms. D. C. General Hospital
- 383 Laboratory Studies of Human Entero- and Respiratory Viruses (10)** Smith  
Participation in a research program involving the characterization of new entero-and respiratory viruses; rounds, conferences, and seminars; laboratory techniques. National Institutes of Health
- 384 Inpatient Medicine (5 or 10)** Mattingly  
Participation in clinical case studies, including histories and physical examinations, consultations, pathologic and radiologic follow-up; library assignments; ward rounds and conferences. Washington Hospital Center
- 385 Inpatient Medicine (5 or 10)** Katz  
Active team member in clinical program involving complete study of medical patients. Specific teaching ward rounds, seminars, and conferences. V. A. Hospital
- 386 Inpatient Medicine and Medical Emergencies (5 or 10)** Mattingly, Curtin  
Specially designed to prepare the senior student for his internship. Assignments to inpatient medicine (Intensive Care Unit) and emergency room for training and experience in handling medical emergencies. Participation in ward rounds and conferences, radiologic and pathologic follow-up; library assignments. Washington Hospital Center
- 387 Renal Diseases—Fluid and Electrolyte Problems (10)** Jacobson  
Participation in clinical research project; rounds, clinics, and conferences.
- 388 Experience in Allergy (10)** Brown  
Diagnosis and treatment of allergic states; skin tests, eye tests, scratch test; clinical and experimental studies; library assignments.
- 389 Clinical Research in Leukemia (10)**  
Participation in clinical research program in hematology and immunology, particularly in patients with malignant diseases. National Cancer Institute
- 390 Inpatient Medicine (10)** Evans, Wipplinger  
Participation in comprehensive study of patients on the Medical Service; ward rounds, consultations, conferences, preceptorial teaching, and seminars. University Hospital
- 391 Clinical Cardiology (5)** Siu  
Clinical cardiology, including instruction in electrocardiography.
- 392 General Practice Preceptorship (5)**  
Opportunity to serve a preceptorship in a general practice in a small urban community. Waynesboro, Va.



- 393 **Clinical Hematology (5)** Corn  
Participation in the clinical and laboratory studies of patients with hematologic disorders, study of bone marrow and peripheral blood smears, hemoglobin electrophoresis, and evaluation of coagulation mechanism. D. C. General Hospital
- 394 **Clinical Studies with Radiolabels (5)**  
Experience and training in the use of specific radioactive isotopes in clinical diagnosis involving organ scanning and utilization of labeled metabolites.
- 395 **Diabetes Mellitus and Insulin Metabolism (5 or 10)** Hines  
Student works up diabetic patients and helps in their regulation under the supervision of the Chief of Medicine. Student participates in research studies on the insulin binding capacity of patients' sera. Room and board furnished. Veterans Administration Center, Martinsburg, W. Va.
- 397 **Chronic Diseases in Aging (5)** McGavack  
Student is assigned selected ward patients for study; attends all stated conferences of the medical and affiliated services at the Center. Under guidance, he selects a problem of his own interest in aging or chronic disease. The study may include record library, medical library, and laboratory research. Special laboratories at the Center offer help in widely diverse fields. Room and board are furnished. Veterans Administration Center, Martinsburg, W. Va.

## Microbiology\*

*Professors* A.M. Griffin, Mary Louise Robbins, R.C. Parlett (*Chairman*)

*Associate Professors* Rudolph Hugh, Lewis Affronti

*Assistant Professors* Melvin Reich, Julian Hoptman (*Research*)

*Instructors (part-time)* Meir Kende, W.D. Hann

*Special Lecturers* L.S. Baron, F.B. Gordon, Leon Jacobs, M.C. Leikind, T.G. Ward

- † 201 **Medical Microbiology (8)** Parlett and Staff  
For medical students. Bacteria, rickettsiae, viruses, yeasts, molds, protozoa, and metazoa which relate to the health and disease of man—cultural study of most important forms; methods of diagnosis by microscopic, cultural, immunologic, and animal reactions; theory and methods of immunology; vaccines; serums; antibiotics. (Spring)
- 211 **Microbiology (4)** The Staff  
A lecture and laboratory course. Graduate course on the study of bacteria, fungi, rickettsiae, and viruses. Prerequisite: any biological laboratory science, Chemistry 151-52 (prerequisite for Medical Technology students: Chemistry 21, 22). Laboratory fee for nonmedical students, \$16. (Fall)
- 212 **Pathogenic Microbiology (4)** The Staff  
A lecture and laboratory course. Continuation of 211 with emphasis upon the harmful activities of microorganisms. Prerequisite: Microbiology 211 or the equivalent. Laboratory fee for nonmedical students, \$16. (Spring)

\* Staff of Instruction for the academic year 1965-66.

† Required course for medical students. Open to qualified graduate students.

- 217 **Advanced Mycology (4)**  
Lecture (2 hours), laboratory (4 hours). Advanced study of the fungi. Lecture and laboratory exercises. Prerequisite: Microbiology 211 or the equivalent. Laboratory fee for nonmedical students, \$16. (1967-68 and alternate years—fall)
- 225 **Microbial Chemistry and Physiology (3)** Affronti  
A lecture course. The biochemical features peculiar to various microorganisms—especially bacteria—are described and are compared with those of the animal cell. Includes discussion of the use of microorganisms in the elucidation of problems in biochemistry. Prerequisite: Biochemistry 221-22 or the equivalent. Microbiology 211 or the equivalent is recommended. (1967-68 and alternate years—fall)
- 227 **Microbial Pharmacology (2)** Affronti  
A lecture course describing the interactions of drugs and microorganisms—action of drugs on microbes, resistance of microbes to drugs, metabolism of drugs by microbes. Includes discussion of the selective action of drugs toward microbial and animal cells. Prerequisite: Microbiology 225 or permission of the instructor. (1966-67 and alternate years—fall)
- 230 **Statistics and Microbiology (2)** Griffin  
The application of statistical methods to the problems of microbiology. For graduate students. Prerequisite: elementary college algebra. (Spring)
- 231 **Immunology and Immunochemistry (4)** Parlett  
Preparation and testing of serological materials. Demonstration of basic serological phenomena. Prerequisite: Microbiology 211. Laboratory fee for nonmedical students, \$16. (1966-67 and alternate years—fall)
- 233 **Virology (4)** Robbins  
Study of viruses and rickettsiae. Lectures and laboratory exercises. For graduate students. Prerequisite: Microbiology 211. Laboratory fee for nonmedical students, \$16. (1967-68 and alternate years—fall)
- 235 **Systematic Bacteriology (3)** Hugh  
The history of bacterial classification. International rules of nomenclature as applied to bacteria, development of bacterial classification based upon relationships. Survey of characteristics of bacterial groups. Prerequisite: Microbiology 212 or the equivalent. (1967-68 and alternate years—fall)
- 251 **Diagnostic Bacteriology—Lecture (1)** Hugh  
Primarily an elective course for medical students; open to qualified graduate students. Lectures on clinical situations involving bacteriology. (Fall)
- 252 **Diagnostic Bacteriology—Laboratory (1)** Hugh  
A two-hour laboratory course to accompany Microbiology 251, concurrent registration for which is required. Mainly demonstrations but includes student participation. (Fall)
- 253 **Diagnostic Mycology—Lecture (1)**  
Primarily for medical students; open to qualified graduate students. Lectures applicable to clinical problems. (Fall)
- 254 **Diagnostic Mycology—Demonstrations, Discussion, Field (1)**  
Accompanies Microbiology 253, concurrent registration for which is required. Class discussion, student presentation of literature in the field, individual or group projects with oral project reports, field trips to other laboratories. Considerable use of teaching aids. (Fall—two hours a week)

- 255 **Diagnostic Virology—Lecture (1)** Robbins  
Primarily for medical students; open to qualified graduate students. Parallels Microbiology 251, with substitution of viruses for bacteria. (Fall)
- 256 **Diagnostic Virology—Laboratory (1)** Robbins  
A two-hour laboratory course to accompany Microbiology 255, concurrent registration for which is required. Mainly demonstrations but includes student participation. (Fall)
- 257 **Diagnostic Immunology—Lecture (1)** Parlett, Affronti  
Primarily for medical students; open to qualified graduate students. Lectures supplementing Microbiology 211 and 212, with emphasis on practical immunology frequently encountered in medical situations. (Fall)
- 258 **Diagnostic Immunology—Laboratory (1)** Parlett, Affronti  
A two-hour laboratory course to accompany Microbiology 257, concurrent registration for which is required. Primarily demonstrations, using teaching aids. Periodic student discussion. (Fall)
- 280 **Virology (10)** Robbins  
Selected problems, with library assignments and laboratory studies; term paper.
- 281 **Bacterial Physiology (5)** Affronti  
Selected problems, with library assignments and laboratory studies; term paper.
- 282 **Immunology (10)** Parlett  
Selected problems, with library assignments and laboratory studies; term paper.
- 283 **Bacteriology (10)** Hugh  
Selected problems, with library assignments and laboratory studies; term paper.
- 284 **Immunologic Characterization of Cell Lines in Tissue Culture (10)** Ward  
Preparation of specific antigens from a cell strain and production antibodies against this strain in an appropriate mammalian host; identification of unknown cell types using tissue culture, serology, and immunochemistry
- 285 **Diploid Cell Lines in Tissue Culture (10)** Ward  
Study of mammalian cells growing on glass surfaces using various media, staining of chromosomes and determination of chromosome pattern and number, methods of preservation of cells such as liquid nitrogen freezing.
- 286 **Transformation of Cells in Tissue Culture (10)** Ward  
Study of conversion of normal cell lines in tissue culture to heteroploid cell lines, and demonstration of cancerous nature of the transformation by inoculation of hamster cheek pouch. Polyoma virus and SB 40 are used with various cell types including human embryo.
- 293-94 **Staff Seminar (1-1)** The Staff  
For graduate students. Bi-weekly throughout the year. (Academic year)
- 295-96 **Research in Microbiology (arr.)** The Staff  
(Academic year)
- 299-300 **Thesis (3-3)** The Staff



## Neurology and Neurological Surgery\*

*Professors* J.W. Watts (Chairman), Harold Stevens, R.S. Paine

*Clinical Professor* J.M. Williams

*Associate Clinical Professors* R.H. Groh, J.F. Fazekas, H.V. Rizzoli, Harvey Ammerman, G.J. Hayes

*Assistant Clinical Professors* J.P. Murphy, A.S. Dekaban, G.M. Swain, G.D. Weickhardt, A.J. Levens, Ntinos Myrianthopoulos, N.H. Horwitz, Ruth Jakoby, Virginia Duggins, L.G. Kempe, C.A. Marsan

*Instructor* G. M. Fenichel

*Clinical Instructors* M.C. Korengold, Z.W. Sanders, R.H. Robertson, R.A. Mendelsohn, A.P. Hustead, Kristoff Abraham, Karin Nelson, R.J. Bortnick, J.W. Barrett, J.L. Fox

*Special Lecturer* K.M. Earle

- † 301 **Neurology and Neurological Surgery (2)** Stevens, Watts  
Clinical lectures and demonstrations deal with the form and functions of the nervous system. Transition between basic sciences and clinical neurology and neurological surgery is stressed and correlated.
- † 302 **Neurology and Neurological Surgery (1)** Fazekas, Rizzoli, and Staff  
Outpatient Clinic with review of cases and consultations between neurologists and neurosurgeons. University Hospital
- 380 **Clinical Neurosurgery (5)** Jakoby  
Experience as clinical clerk in neurosurgery; participations in myelograms, pneumoencephalograms, arteriograms, and operating room procedures; attendance on ward rounds and conferences. D. C. General Hospital
- 381 **Clinical Neurosurgery (5)** Hayes  
Participation in all departmental activities, including ward rounds, daily conferences, radiographic and pathologic studies, and operating room procedures. Special attention devoted to studies of cerebral circulation. Walter Reed General Hospital
- 382 **Pediatric Neurology (5 or 10)** Paine  
Clinical clerkship in diagnostic study and care of inpatients and outpatients; participation in organized conferences and teaching sessions. Children's Hospital
- 383 **Clinical Neurology (10)** Levens  
Continuing program in neurology with emphasis on the neurological examination and the basic sciences, including neuroanatomy, as applied to clinical material. Walter Reed General Hospital
- 384 **Histochemical Techniques for Neurology (5)** Fenichel  
Experience in histochemical procedures, including quick freezing techniques, cryostat sectioning, and a variety of enzyme reaction stains.

\* Staff of Instruction for the academic year 1965-66.

† Required course for medical students.

## Obstetrics and Gynecology\*

*Professors* John Parks, R.H. Barter (*Chairman*)

*Clinical Professors* S.M. Dodek, J.A. Dusbabek

*Associate Professor* J.G. Sites

*Associate Clinical Professors*, C.K. Fraser, J.K. Cromer, Dwight Callagan, Edward Zimmerman, W.T. Lady, W.P. McKelway, J.W. Pearson, Jr., Shirley Martin, M.S. Kaufman, M.P. Footer, Donald Walters, J.M. Friedman, R.E. Bieren, B.W. Richwine

*Assistant Professor* Benny Waxman

*Assistant Clinical Professors* Caroline Jackson, T.A. Wilson, J.R. Epstein, S.H. Shea, G.L. Jarvis, N.J. Price, J.C. Walsh, L.M. Liverett, Peter Soyster, H.P. Treichler, W.H. Cooper, I.W. Rovner, M.W. Sandmeyer, Jr., N.M. Tart, L.W. Davis

*Instructor* C.B. Jacobson

*Clinical Instructors* A.S. Bright, Elizabeth Crisp, A.W. Winshel, L.D. Amorosi, S.M. Belinsky, R.V. Erkenbeck, E.E. Gahres, John Lukasik, D.R. Carlson, E.E. Cunningham, Geraldine Paul, L.Q. Pugsley, H.L. Kotz, O.I. Dodek, Jr., T.F. Blackwelder, M.H. Hird, S.F. Stewart, Jr., H.E. Olson, Josiah Sacks, J.R. Marshall

- † 301 **Obstetrics and Gynecology (2)** Parks, Barter, Sites  
Lectures and demonstrations covering the entire field of obstetrics and gynecology with emphasis on clinical management.
- † 302 **Major Clinical Situations (Obstetrics and Gynecology) (2)** The Staff  
Lectures and demonstrations in obstetrical and gynecological diagnosis and treatment.
- † 303 **Clinical Obstetrics and Gynecology (10)** The Staff  
Students participate in all obstetrical and gynecological clinics and attend daily departmental conferences and ward rounds at the University and D. C. General hospitals. Mannikin demonstrations of the mechanism of labor and various types of operative delivery.
- 380 **Clinical Gynecology (5)** Barter  
Participation in clinical studies; rounds and conferences. University Hospital
- 381 **Obstetric Delivery Service (5)** Waxman  
Participation in care of obstetric inpatients; rounds and conferences. D. C. General Hospital
- 382 **Obstetric Clinics (5)** Waxman  
Participation in prenatal and postpartum clinics. D. C. General Hospital
- 383 **Clinical Obstetrics (5)** Dodek, Fraser  
Experience in obstetrics, including prenatal clinics, lying-in periods, delivery and postpartum care; rounds, conferences, and seminars. Washington Hospital Center
- 384 **Clinical Gynecology (5)** Cromer, Gahres  
Participation in clinical studies; rounds and conferences, including tumor board; gynecologic pathology; preparation for surgery; attendance at surgery; postoperative care. Washington Hospital Center

\* Staff of Instruction for the academic year 1965-66.

† Required course for medical students.

- 385 **Inpatient Obstetrics and Gynecology (5)** Callagan  
Supervised instruction in obstetrics and gynecology in a large military hospital; rounds and conferences. National Naval Medical Center
- 386 **Inpatient Obstetrics and Gynecology (5)** Zimmerman  
Supervised instruction in obstetrics and gynecology in a large military hospital; rounds and conferences. Walter Reed General Hospital
- 387 **Clinical Obstetrics and Gynecology (5)** Sites  
Participation in clinical studies; rounds and conferences. University Hospital
- 388 **Clinical Obstetrics and Gynecology (5)** Soyster  
Participation in all aspects of inpatient and outpatient obstetrical and gynecologic services; rounds, obstetrical-gynecologic conferences, gynecologic pathology conferences; instruction in obstetrical anesthesia; participation in Emergency Room consultations. Home visits to selected patients with Health Department Nurse.
- 389 **Gynecologic Cancer Research (5)** McKelway  
Clinical research in gynecologic cancer. Surgical techniques and library assignments.

## Ophthalmology\*

*Clinical Professors* E.A.W. Sheppard, F.D. Costenbader, J.H. King, Jr., L.E. Zimmerman (*Ophthalmic Pathology*), L.C. Moss

*Associate Professor* J.W. McTigue (*Chairman*)

*Associate Clinical Professor* R.W. Wilkinson

*Assistant Professor* B.S. Fine

*Assistant Clinical Professors* W.J. Romejko, W.P. Chalfant, Jr., W.J.G. Davis, R.E. duPrey, Robert Day, M.G. Alper, J.H. Lodge, W.B. Glew, J.T. Schwartz

*Clinical Instructors* J.R. Weimer, Stephen Pappas, Joanne Economon, D.K. Berler, R.S. Deitch, F.J. Weinstock, H.S. Wicker, H.I. Rodman

- 282 **Ophthalmic Pathology I (3)** Zimmerman  
Systematic study of the diseases of the eye as revealed by gross and microscopic examination. Limited to 6 students. Armed Forces Institute of Pathology
- 284 **Ophthalmic Pathology II (5)** Zimmerman  
Daily participation in an active service limited to pathology of the eye and its adnexa. Inflammatory, degenerative, and neoplastic diseases comprise the major categories. Armed Forces Institute of Pathology (1 month, full time)
- † 301 **Ophthalmology (1)** The Staff  
Didactic lectures on all basic principles of medical and surgical ophthalmology and neuro-ophthalmology.

\* Staff of Instruction for the academic year 1965-66.

† Required course for medical students.



- \* 302 **Ophthalmology (OPD)(1)** Lodge  
Clinical instruction in the external examination of the eye, including tonometry and funduscopy. Instruction in the use of specialized instruments employed in ophthalmology.

- 380 **Clinical Ophthalmology (5)** Lodge and Staff  
Observation of ophthalmological disease in outpatients and inpatients, ophthalmic surgery, and fundus examinations through widely dilated pupils. Attendance at rounds, conferences, and specialty clinics.

## Otolaryngology†

*Associate Clinical Professor J.J. McFarland, Jr. (Chairman)*

*Assistant Clinical Professors Catharine Birch, J.L. Levine, M.E. Krucoff, R.S. Page, Jr., J.A. Sabri, W.M. Tribble*

*Clinical Instructors B.M. Webb, Sidney Jaffee, R.L. Fields, R.D. Ralph, H.H.E. Scheidemandel*

- \* 301 **Otolaryngology** The Staff  
Lectures and demonstrations on anatomy, physiology, and diseases of the ear, nose, and throat. (Spring)

- 354 **Bronchoscopy** The Staff  
A series of lectures on the fundamental principles and the use of instruments, including both the bronchoscope and esophagoscope. (Spring)

- 380 **Otolaryngology (5)** McFarland  
Participation in care of inpatients and outpatients, diagnosis and therapy; rounds and conferences. Washington Hospital Center

## Pathology†

*Professors T.M. Peery (Chairman), W.R. Duryee (Research), F.N. Miller, Jr., William Newman*

*Clinical Professors L.E. Zimmerman (Ophthalmic Pathology), J.M. Blumberg, E.B. Helwig (Dermatology)*

*Associate Professor W.L. Marsh*

*Associate Clinical Professors Louis Hansen, J.S. Howe, V.E. Martens, Theodore Winship, R.E. Palmer, H.H. Scofield*

*Assistant Professors Lois Platt (Cytology), Alexander Breslow, F.S. Jannotta, Gloria Brennan*

*Assistant Clinical Professors W.F. Enos, Cornelia Hoch-Ligeti, L.W. Fix, Grace Guin, E.H. Zeitler, Marjorie Williams, L.F. Misanik, C.B. Cook, D.R. Parkinson, I.D. Godwin, J.F. Legier, W.J. Jaffurs*

*Clinical Instructors R.L. Davis, P.W. Lampert*

*Special Lecturer L.C. Johnson*

- 115-16 **Introduction to Medical Science (1-1)** Marsh and Staff  
For students in medical technology at the University Hospital. These lectures, based upon physiology, pathology, and medicine, provide a back-

\* Required course for medical students.

† Staff of Instruction for the academic year 1965-66.

ground for the interpretation of laboratory data. (Academic year—1 hour a week)

**117-18 Principles in Medical Technology (4-4)** Marsh and Staff

For students in medical technology at the University Hospital. Theories, principles, and sources of error of the methods used in clinical chemistry, clinical bacteriology, serology, hematology, and clinical microscopy. (Academic year—4 hours a week)

**119-20 Medical Technology Laboratory (10-10)** Marsh and Staff

Practice and experience by rotation through the various divisions of the pathology laboratories of the University Hospital, as follows: hematology and urinalysis, 12 weeks; chemistry, 12 weeks; bacteriology and parasitology, 12 weeks; blood bank, 6 weeks; serology, 4 weeks; tissue pathology, 4 weeks. (35 hours a week for 50 weeks)

**\* 201 Pathology (8)** Peery, Miller, Breslow, Jannotta

General pathology of inflammations, degenerations, malformations, trauma, and neoplasms. Special pathology of the organ systems, and correlation with symptoms and physical signs. The laboratory work consists of the gross and microscopic study of diseased tissues. All students take turns on weekend autopsy call. (Fall—12 hours a week)

**\* 202 Clinico-Pathologic Correlation Conferences (1)** The Staff

Case studies demonstrating the pathologic significance of major clinical symptoms and physical signs. (Spring—1 hour a week)

**\* 203 Forensic Medicine (1)** Miller

(Fall)

**252 Forensic Pathology and Medical Jurisprudence (1)** Miller

Pathology of trauma and of chemical poisons. The physician in relation to the law: legal vs. ethical rights and responsibilities; investigation of death; legal problems in medicine. (Spring—1 hour a week)

**254 Surgical Pathology I (1)** Newman and Staff

A systematic study of organ changes in surgical diseases; correlation of gross and microscopic findings with clinical manifestations and prognosis. (Spring—1 hour a week)

**256 Cells—Normal and Pathologic (1)** Jannotta, Duryee, Platt

Normal and abnormal cell structure, function, and reproduction. Practical problems of cellular diagnosis in cytogenetics, exfoliative cytology, and bone marrow studies. Limited to 50 students. (Spring—1 hour a week)

**258 Neuropathology (1)** Legier

A systematic study of the organ changes in diseases of the central nervous system, including developmental disorders, degenerative diseases, and neoplasms. Limited to 50 students. (Spring—1 hour a week)

**260 Obstetric and Gynecologic Pathology (1)** Jaffurs

An overview of the organ changes in pregnancy, normal and abnormal, including both the mother and the fetus. Diseases of the female genital system. Limited to 50 students. (Spring—1 hour a week)

**262 Problems in Experimental Cellular Pathology (1)** Duryee

Cytological and biochemical aspects of cellular function in relation to normal and selected pathological conditions. (Spring—1 hour a week)

**269-70 Clinical Pathologic Conferences (0)** The Staff

Case histories presented and differential diagnosis discussed by members of

\* Required course for medical students.

the Staff. Clinical, laboratory, and necropsy findings are correlated. Attended by students during their clerkship in the University Hospital. (Fall and spring—as arranged)

- 272 **Pathology in Medicine and Surgery (2)** Peery  
Survey of current literature, with application of pathology to clinical medicine and surgery. Each student is assigned a specific article each week, for study, written report, and group critique. Limited to 10 students. (Spring—2 hours a week)
- 274 **Medical Pathology (2)** Breslow, Miller, Brennan  
Detailed study of selected cases from the necropsy service at the University Hospital, evaluating and interpreting gross and microscopic tissue changes and correlating them with clinical data. Multiple sections, maximum 20 students to a section. (Spring—2 hours a week)
- 276 **Seminars in Pathology (2)** Peery and Staff  
Participation in conferences in anatomical pathology, conducted by, and primarily for, residents in pathology. Limited to 5 students, each of whom will team up with a resident to prepare and present a seminar on a selected topic. University Hospital (Spring—2 hours a week)
- 280 **Surgical Pathology II (4)** Newman and Staff  
Direct participation in the surgical pathology service at the University Hospital, examining assigned specimens from current surgical cases, and correlating with clinical manifestations. Limited to 4 students. University Hospital (Spring—6 hours a week)
- 282 **Ophthalmic Pathology I (3)** Zimmerman  
Systematic study of the diseases of the eye as revealed by gross and microscopic examination. Limited to 6 students. Armed Forces Institute of Pathology (Spring—4 hours a week)
- 284 **Ophthalmic Pathology II (5)** Zimmerman  
Daily participation in an active service limited to pathology of the eye and its adnexa. Inflammatory, degenerative, and neoplastic diseases comprise the major categories. Armed Forces Institute of Pathology (Spring—1 month, full time)
- 285 **Clinical Pathology (10)** Martens  
Instruction and experience in selected techniques of clinical chemistry, hematology, and bacteriology. Each student is encouraged to study a specific laboratory problem. Washington Hospital Center (Spring—2 months, full time)
- 286 **Biophysics: Electron Microscopy (10)** Zeitler  
Training in basic electron microscopy, including preparation of tissues, alignment procedures, and image interpretation; participation in current research. Armed Forces Institute of Pathology (Spring—2 months, full time)
- 287 **Clinical Pathology (5)** Marsh, Breslow  
Techniques in the clinical laboratory and interpretation of results: microbiology, blood bank, clinical chemistry, hematology; follow-up studies in selected cases. University Hospital (Spring—1 month, full time)
- 288 **Clinical Cytology (5)** Platt  
Evaluation of cytologic smears, chiefly vaginal, as a screening procedure in cancer diagnosis; participation in day-to-day routine and study of selected teaching cases. University Cancer Clinic (Spring—1 month, full time)



- 289 Pathology of the Oral Regions (5)** Scofield  
Participation in the consultative functions of the Dental and Oral Pathology Division and in regularly scheduled Division conferences. Review of current surgical and autopsy material and correlation with the clinical history of the case; systematic study of selected topics. Armed Forces Institute of Pathology (Spring—1 month, full time)
- 290 Clinical and Anatomical Pathology (5)** Cook  
Participation in daily studies of surgical and necropsy pathology, including forensic pathology; clinical pathology projects including hematology, isotopology, and bacteriology. Fairfax Hospital (Spring—1 month, full time)
- 291 Experimental Cell Pathology: Cancer Research (5)** Duryee  
Study of experimental animal tumors, participation in tissue culture work, library assignments. University Cancer Clinic (Spring—1 month, full time)
- 292 Experimental Pathology: Enzymatic Changes in Human Tissues (10)** Hoch-Ligeti  
Participation in studies of distribution and concentration of lactic dehydrogenase, beta glucuronidase, and their isoenzymes in human tissues in disease, using electrophoretic, spectrophotometric, colorimetric, histochemical, and histological techniques; limited participation in routine studies in clinical and anatomical pathology. Room and board furnished. Veterans Administration Center, Martinsburg, W. Va. (Spring—2 months, full time)
- 293 Clinical and Anatomical Pathology (5)** Palmer  
Participation in regular departmental activities, including clinical chemistry, blood bank, microbiology, and hematology; surgical pathology; autopsy pathology, including medico-legal autopsies. Alexandria Hospital (Spring—1 month, full time)
- 294 Surgical Pathology (5)** Winship  
Assisting in preparation of surgical specimens and microscopic examinations, preoperative examination of patients with tumors followed by frozen section examination of excised lesions; regular schedule of teaching conferences. Washington Hospital Center (Spring—1 month, full time)
- 296 Surgical Pathology (10)** Newman  
Evaluation of surgical specimens and correlation with clinical status of the patient; description of gross and microscopic findings on assigned cases. University Hospital (Spring—2 months, full time)
- 297 Neuropathology (10)** Earle, Davis  
Case studies, conferences, and participation in current research projects. Armed Forces Institute of Pathology (Spring—2 months, full time)
- 298 Necropsy Pathology (5)** Miller, Breslow  
Study of organ changes in disease, participation in gross and microscopic examinations, preparation of protocols. University Hospital (Spring—1 month, full time)
- 299 Dermal Pathology (5)** Helwig  
Participation in microscopic conferences, review of current material and of study sets. Armed Forces Institute of Pathology (Spring—1 month, full time)

## Pediatrics\*

*Professor R.S. Lourie*

*Clinical Professors W.S. Anderson, R.H. Parrott, L.E. Hoeck, W.A. Howard (Chairman), J.A. Washington*

*Associate Professor L.P. Scott III*

*Associate Clinical Professors T.E. Reichelderfer, Margaret Gutelius*

*Assistant Professors S.L. Leikin, Wellington Hung, Artemis Simopoulos, E.V. Soto, Mildred Tate (Psychiatric Social Work), Leon Cytryn, A.E. Marans*

*Assistant Clinical Professors Mabel Grosvenor, A.B. Coleman, R.E. Martin, William Stark, J.R. Puig, J.H. Peacock, Jr., Mary Sartwell, C.F. Steigler, H.G. Clark, Adrian Recinos, Jr., C.R. Webb, A.R. MacPherson, G.J. Cohen, Bennett Olshaker, J.R. Fraga, Jean Yacoubian*

*Clinical Instructors H.H. Diamond, R.H. Mitchell, R.O. Warthen, Emilie Black, R.H. Anderson, W.G. Preisser, H.T. Yates, Roger Berkstrom, Mary Fox, S.Z. Goldblatt, Hilary Millar, Harold Plotsky, A.J. Modlin, Jean Lockhart, G.W. Daisley, Jr., Belinda Straight, Stephen Mourat, Agnes Schweitzer, G.W. Hardman, Jr., M.O. Kepler, H.D. Knox, Frances Min, B.H. Ong, L.W. Perry, T.H. Anders, Morris Feitel, A.M. Rivera*

### † 301 **Pediatrics (1)** Howard and Staff

Introduction to pediatrics. Lectures and demonstrations on pathophysiology of the newborn, emotional and physical growth and development. Infant nutrition and the fundamentals of disease states in infants and children. Washington Hospital Center or University Hospital

### † 302 **Major Clinical Situations (Pediatrics) (2)**

Lectures and demonstrations in pediatric diagnosis and treatment.

### † 303 **Pediatric Clerkship (10)** Howard and Staff

Full time, including assignments to night and holiday admissions, working as part of the Resident team. Ward teaching rounds with Staff and Residents, work in outpatient department and speciality clinics under Staff supervision. Child psychiatry and child guidance, lectures, clinical pathological conferences, and grand rounds. Children's Hospital

### 380 **Clinical Pediatrics (5)** Puig

Participation in diagnostic studies and therapeutic procedures; rounds and conferences. Children's Hospital

### 381 **Pediatric Allergy (5)** Howard

Experience in recognition, differential diagnosis, and treatment of allergic disorders of children, both inpatient and outpatient. Children's Hospital

### 382 **Pediatric Radiology (5)** Lo Presti

Diagnostic and therapeutic radiology in infants and children; special diagnostic procedures. Children's Hospital

### 383 **Clinical Pediatrics (5)** Reichelderfer, Schweitzer

Participation in all ward activities, including histories, physical examinations, and laboratory studies on new patients; rounds and conferences, with emphasis on preventive pediatrics. D. C. General Hospital

\* Staff of Instruction for the academic year 1965-66.

† Required course for medical students.

- 384 **Newborn and Premature (5)** Simopoulos  
Clinical studies in newborn care emphasizing hematologic problems and congenital malformations, daily rounds and teaching conferences, research studies in cytogenetics. University Hospital
- 385 **Child Psychiatry (5 or 10)** Lourie  
Participation in diagnostic and follow-up studies on inpatients and outpatients; rounds, conferences, and seminars; visits to related facilities in the community. Children's Hospital
- 386 **Pediatric Hematology (5)** Leikin  
Clinical and laboratory studies of infants and children with hematologic disorders, bone marrow examinations, exchange transfusions.
- 387 **Clinical Pediatrics (5)** Soto  
Participation in care of newborn and children on inpatient basis; diagnostic studies, therapy; assigned reading. Fairfax Hospital
- 388 **Newborn and Premature (5)** Reichelderfer, Schweitzer  
Introduction to care of the newborn infant, emphasizing the normal but including problem cases; assigned reading, rounds, conferences, and seminars. D. C. General Hospital
- 389 **Pediatric Cardiology (5 or 10)** Scott  
Physical diagnosis of congenital and acquired heart diseases in children; instruction in interpretation of electrocardiograms and vectorcardiograms; assisting in cardiac catheterizations. Children's Hospital

## Pharmacology\*

*Professors* H.G. Mandel (*Chairman*),† Clarke Davison

*Professorial Lecturer* B.B. Brodie

*Associate Professors* V.H. Cohn, Paul Mazel, K.S. Kim (*Research*)

*Assistant Professors* W.P. Weiss, W.R. Jondorf (*Research*), Dezider Gruenberger (*Visiting—Research*), G.A. Hahn (*Research*), Philip Klubes (*Research*), J.A. Straw, T.M. Farber (*Research*)

*Special Lecturer* F.E. Hahn

- ‡ 201 **Pharmacology (8)** Mandel and Staff  
Lectures, laboratory, and conferences concerning the interaction of drugs and biological systems as a basis for the rational therapy of disease. Open to qualified nonmedical students. (Fall)
- 252 **Seminar: Clinical Pharmacology (2)** Weiss  
Special problems in therapeutics, with particular emphasis on drugs used in the treatment of cardiovascular and infectious diseases. Students are expected to participate in discussions and in preparation of some lectures. Enrollment limited. (1966-67 and alternate years—spring)
- 254 **Frontiers in Pharmacology (1)** Mandel and Staff  
Informal lecture course dealing with recent advances and fields of active research in pharmacology. Most of the material will be presented by

\* Staff of Instruction for the academic year 1965-66.

† On sabbatical leave 1965-66.

‡ Required course for medical students.



laboratory scientists from neighboring institutions. Limited to 50 medical and graduate students. (Spring)

**256 Molecular Pharmacology (2)**

Hahn

Lectures dealing with current theory on the action of drugs, especially chemotherapeutic agents, at the molecular level. The effect of drugs on biosynthetic processes of the cell are described with respect to DNA, messenger RNA, transfer RNA, ribosomes, protein, cell wall, and intermediary metabolites. Factors which alter the action of drugs, such as drug interactions and resistance, are discussed. (Spring)

**258 Cancer (2)**

Mandel and Staff

Lectures dealing with the nature and treatment of cancer, with emphasis on chemotherapy, from the point of view of the underlying biochemistry of neoplastic tissue and the problems associated with the "rational" approach in pharmacology. Limited to 50 medical students and qualified graduate students. (1966-67 and alternate years—spring)

**264 Pharmacological Research (6)**

The Staff

Laboratory research, two full days a week, in pharmacological problems of departmental interest, including metabolism of narcotic and nonnarcotic analgesic agents, metabolism and mechanism of action of antibiotics and anticancer drugs, protein synthesis, and adaptation in drug metabolism. Open to 3 qualified medical students. (Spring)

**267-68 Pharmacological Research (arr.)**

The Staff

Primarily for properly qualified graduate students seeking careers in pharmacology. (Academic year)

**269-70 Pharmacology Seminar (1-1)**

The Staff

Recent advances in pharmacology. For those interested in pharmacological research. Open to qualified nonmedical students. (Academic year)

**272 Physiological Disposition of Drugs (3)**

Cohn, Davison

A lecture and seminar course dealing with the fate of drugs in biological tissue. Discussion of absorption, distribution, chemical alteration, and excretion of drugs; and the physical, chemical, and biological factors affecting these processes. Limited to 20 qualified medical students and additional graduate students. Prerequisite: Pharmacology 201. (1967-68 and alternate years—spring)

**279-80 Special Topics in Pharmacology (arr.)**

The Staff

A lecture course dealing with selected aspects of drug action. Prerequisite: Pharmacology 201. (Academic year)

**281 Physiological Techniques in Pharmacology—Lecture (1)**

Mazel

A series of lectures designed to illustrate physiological techniques useful in obtaining information concerning mechanism and site of action of pharmacological agents. Open to 10 medical students and additional graduate students. Prerequisite: Pharmacology 201. (1967-68 and alternate years—spring)

**282 Physiological Techniques in Pharmacology—Laboratory (2)**

Mazel

A laboratory course designed to accompany 281. Prerequisite: Pharmacology 201; prerequisite or concurrent registration: Pharmacology 281. (1967-68 and alternate years—spring)

**283 Biochemical Techniques in Pharmacology—Lecture (1)**

Cohn, Davison

Pharmacology 283 and 284 combine to make a lecture and laboratory course designed to equip the student with the theory and practice of modern biochemical techniques applicable to the study of the metabolic fate and

mechanism of action of drugs. Open to 15 medical students and additional graduate students. Pharmacology 283 may be taken without 284. Prerequisite: Pharmacology 201. (1966-67 and alternate years—spring)

**284 Biochemical Techniques in Pharmacology—Laboratory (2)** Cohn, Davison

A laboratory course designed to accompany 283. Open to 4 medical students and additional graduate students. Prerequisite: Pharmacology 201; prerequisite or concurrent registration: Pharmacology 283. (1966-67 and alternate years—spring)

**285 Readings in Pharmacology (arr.)** The Staff  
For medical students. Assigned reading and preparation of report.

**286 Research in Pharmacology (arr.)** The Staff  
For medical students. Participation in experimental studies in pharmacology, particularly bacterial chemotherapy, cancer chemotherapy, or drug metabolism.

**299-300 Thesis (3-3)** The Staff  
Required of Master of Arts and Master of Science candidates. (Academic year)

## Physical Medicine and Rehabilitation\*

*Professor C.S. Wise (Chairman)*

*Clinical Professor M.A. Seidenfeld (Psychology)*

*Associate Professor John Watt, Jr.*

*Assistant Clinical Professors P.A. Klieger, Giuseppe Balsamo, Inez Hill, A.B.C. Knudson, F.L. Wenger*

*Clinical Instructor David Zohn*

**† 301 Advanced Physical Medicine (1)** The Staff

Lectures and demonstrations concerning the various techniques, clinical applications of Physical Medicine and Rehabilitation to be integrated with the teaching of the associated medical and surgical specialties. (Spring)

**352 Physical Medicine and Rehabilitation (5)** Wise

Participation in departmental procedures, including examination and evaluation of patients requiring rehabilitation.

**395 Research (arr.)** The Staff

Open to medical students. (Fall)

\* Staff of Instruction for the academic year 1965-66.

† Required course for medical students.

## 54 PHYSICAL MEDICINE AND REHABILITATION

## Physiology\*

*Professors* C.S. Tidball (*Chairman*), E.S. Nasset (*Visiting*)

*Professorial Lecturers* A.K. Davis, L.L. Langley

*Associate Professors* Hortense Louckes (*Research*), Elizabeth Tidball (*Research*) Q.L. Hartwig (*Research*)

*Associate Professorial Lecturers* P.G. Nelson, D.P. Rall, W.D. Odell

*Assistant Professors* Marie Cassidy, P.T. Ridley, E.O. Cirpili (*Visiting*), Elizabeth Stephenson

*Assistant Professorial Lecturers* R.J. Podolsky, Barbara Alving, J.B. Block, R.E. Alving, J.L. Holtzman, M.L. Shore, R.H. Adamson, W.A. Hagins, Richard Moore

*Instructors (part-time)* E.S. Henderson, C.H. Wollack

*Special Lecturer* J.H.U. Brown

### † 201 **Physiology (8)** The Staff

Lecture (6 hours), laboratory (6 hours), conference (2 hours). An introductory, graduate level course covering cellular, organic system, and applied mammalian physiology. This course or the equivalent is prerequisite to all other courses in physiology. Prerequisite for graduate students: Anatomy 201 or the equivalent, Biological Sciences 103-4, Biochemistry 201 or 221-22 (Biochemistry 222 may be taken concurrently), or consent of the Chairman of the Department. Nonmedical students please note that the first meeting of the course occurs one week before the start of University campus classes. (Spring)

### 211-12 **Problems in Physiology (arr.)** The Staff

Detailed study of a special area of physiology under the supervision of a Staff member. Admission by permission of the instructor. (Academic year)

### 221-22 **Seminar (1-1)** Stephenson

Presentations from the literature by Staff and students on a prescribed topic each semester. Present work is discussed; experimental design and scientific deduction are evaluated. Topics to be announced. Prerequisite: Physiology 201 and a reading knowledge of French or German. (Academic year)

### 231 **Advanced Laboratory (2)** The Staff

Preparation and performance of selected advanced experiments in the physiology laboratory such as microelectrode implantation, pulmonary function studies, heart-lung preparation. Enrollment limited to 16 students. (Fall)

### 251 **History of Medicine (1)** E. Tidball

Lecture 1 hour a week. A survey of the great contributors to physiology and medicine in the context of the times in which they lived and worked. (Fall)

### 253 **Clinical Applications of Physiology (1)** C. Tidball

Conference 1 hour a week. Special emphasis on acid-base physiology and fluid balance physiology and their relation to clinical problems. (Fall)

\* Staff of Instruction for the academic year 1965-66.

† Required course for medical students. Open to qualified graduate students.



**255 Introduction to Electrocardiography (1)**

Caceres

Lecture 1 hour a week. A course offered jointly by the Department of Physiology and the Public Health Service Instrumentation Field Station. These sessions are intended to provide a basic understanding of cardiac electrical activity, the means used to record it, and a limited amount of information on the application of these principles to the diagnosis of cardiac disease. (Fall)

**257 Evaluation of Medical Literature (1)**

Cassidy

Conference 1 hour a week. Designed to provide the medical student with criteria for analyzing published medical and scientific reports as an adjunct to his self-educational efforts. (Fall)

**261 Gastrointestinal Physiology (2)**

Louckes

Lecture or conference 2 hours a week. Physiological approach to such clinical problems as peptic ulcer, malabsorption, ulcerative colitis, hepatitis, and others.

**263 Endocrine Physiology (2)**

Odell

Lecture or conference 2 hours a week. Basic physiology underlying clinical derangements involving abnormal endocrine function.

**271 Electronic Instrumentation (3)**

B. Alving

Lecture (2 hours), laboratory (3 hours). Fundamentals of electronic theory and practice. Simplified circuits will be assembled in the laboratory. The application of these principles to physiological measurements will be stressed. Intended for graduate students but open to qualified medical students. Prerequisites: Mathematics 22 and Physics 1-2 or the equivalent and the consent of the instructor. (Fall)

**281 Experimental Gastrointestinal Physiology (5 or 10)**

C. Tidball

One or two month elective for junior and senior medical students. Available all periods but limited to two students in any one period. Discuss with instructor before enrolling.

**282 Experimental Cellular Physiology (5 or 10)**

Cassidy

One or two month elective for junior and senior medical students. Available all periods but limited to two students in any one period. Discuss with instructor before enrolling.

**283 Experimental Radiation Physiology (5 or 10)**

Hartwig

One or two month elective for junior and senior students. Available all periods but limited to two students in any one period. Discuss with instructor before enrolling.

**295-96 Research (arr.)**

The Staff

By special arrangement with individual Staff members. (It is expected that approximately 4 clock hours will be spent in the laboratory for each semester hour credit). Hours to be arranged.

**299-300 Thesis (3-3)**

The Staff

## Preventive Medicine and Community Health\*

*Professor J.F. Sadusk, Jr.,*

*Clinical Professor Murray Grant*

*Professorial Lecturer D.L. Finucane*

*Associate Professor C.R. Hartman (Acting Chairman)*

*Associate Clinical Professors David Frost, G.O. Pierce, J.M. Pisani,  
L.C. Robbins, W.J. Zukel*

*Assistant Clinical Professors L.A. Pyle, Jr., J.H. Vinyard, Jr.*

- † 301 **Preventive Medicine and Community Health (1)** The Staff  
A lecture-seminar covering fundamental aspects of preventive medicine, public health, and occupational medicine. Open to qualified graduate students. Prerequisite for graduate students: Microbiology 211 and 212 or the equivalent. (Spring)
- † 302 **Preventive Medicine and Community Health (1)** The Staff  
A continuation of Preventive Medicine and Community Health 301 covering advanced aspects of preventive medicine and community health. The place of the physician in his community and current socioeconomic medical problems is discussed in preparation for later clinical years. (Fall)
- † 303 **Continuing Care Program (2)** Interdepartmental Staff  
Medical care program carried out in coordination with the staff members of Medicine, Obstetrics, Surgery, and other departments. Students are responsible, under the guidance and direction of specific preceptors, for the diagnosis and care of three selected patients chosen from the disciplines of medicine, obstetrics, psychiatry, and pediatrics. The clinics and inpatient facilities of the University and Fairfax hospitals, and Washington Hospital Center are utilized in the program. Health maintenance, development of the family doctor-patient relationship is stressed; introduction to the use of community health resources. (Fall)
- 380 **Methods in Public Health (5)** Grant  
Introduction to methods and procedures in public health by rotation through all divisions, including mental health, maternal and child health, environmental medicine, and communicable diseases; field trips.
- 381 **Group Clinic Practice (10)** Sadusk, W. E. Mowery  
An opportunity to observe the functioning of and participation in a group clinic. Quarters will be furnished. Mowery Clinic, Salinas, Kansas
- 382 **Clinical Practice of Public Health (10)** Grant  
Study in depth of public health practice, participating as a member of a mobile unit screening for various diseases in the community. D.C. Department of Public Health
- 384 **Research in Public Health (10)** Grant  
A supervised research project, the student selecting the topic from a broad range of public health problems, including mental health, maternal and child health, environmental medicine, epidemiological methods.
- 385 **Studies in Cardiovascular Disease (5)** Zukel  
Participation in one or more of the current studies at the National Heart Institute, with selection by the student.

\* Staff of Instruction for the academic year 1965-66.

† Required course for medical students.

Diagnosis, treatment, epidemiology, and laboratory aspects of intestinal parasitic diseases, together with intensive instruction in sigmoidoscopy.

## **Psychiatry\***

*Professors* Leon Yochelson (*Chairman*), Samuel Yochelson (*Research*)

*Clinical Professors* J.D. Schultz, D.C. Cameron, F.A. Freyhan, D. M. Bullard, T.D. Noble, Sidney Berman, Morris Kleinerman, M. deG. Ruffin, Norman Taub

*Associate Professor* J.E. Rankin

*Associate Clinical Professors* H.P. Laughlin, M.L. Adland, Anna Todd, Leon Ferber, P.H. Gray, Paul Chodoff, S.L. Werkman, I.H. Kaiser, H.A. Meyersburg, C.T. Bever, David Eden, F.N. Waldrop, S.F. Yolles

*Assistant Professors* J.G. Rubin, E.S. Fleming, P.S. Weisberg, Helen Percy

*Assistant Clinical Professors* Sarah Tenenblatt, Richard Schaengold, Joseph Abrahams, R.M. Greenberg, W.D. Kehne, J.B. Chassan, R.W. Gans, R.A. Rogers, J.A. Farrell, S.C. Gordon, H.B. Lehrman, A.M. Drummond, N.C. Rintz, J.L. Sheridan, L.J. Duhl, F.G. Hilkert, J.T. English, Susannah Gourevitch, I.D. Milowe, Irwin Marill, W.C. Johnson, R.A. Frank, Leslie Schaffer, D.W. Harris, A.H. Kiracofe, Jr., T.M. Mackenzie, Daniel Prager, R.N. Butler, E.I. Kushner, Jean Menetrez, Christine Kehne, M.A. Woodbury, W.H. Young, Jr., Bertram Brown, J.H. Bouma, B.L. Burris, W.J. Stocton

*Clinical Instructors* Maxwell Boverman, Seymour Rabinowitz, D.S. Sprague

*Special Lecturers* W.E. Barton, Reza Arasteh

- † 301 **Psychiatry in the Practice of Medicine (4)** L. Yochelson and Staff  
Normal personality development, psychopathological mechanisms, psychosomatic disturbances, medical interviewing and the description of the major psychiatric disorders, their causes, courses and treatment. Clinical demonstrations of the psychoses, neuroses and character disorders.

- † 302 **Clinical Clerkship (5)** Renkin and Staff  
Supervised examination, diagnosis and treatment of ambulatory and hospitalized cases at the University Hospital and hospitalized cases at St. Elizabeths Hospital. Case conferences with students presenting, lectures and seminars on psychiatric referral, use of psychiatric drugs, etc. Clinical application of psychiatric principles to general medical practice is stressed.

- 380 **Clinical Problems in Child Psychiatry and Psychotherapy (10)** Prager  
Clinical Clerkship in a school for exceptional children of superior intelligence. Case histories, diagnoses, staff conferences, treatment, interviews with children and parents. Didactic lectures by visiting specialists in child

\* Staff of Instruction for the academic year 1965-66.

† Required course for medical students.



growth and psychological development. Individual and group supervision of each clinical clerk by practicing child psychiatrist. Agnes Grief School

- 381 **Child Psychiatry (5)** Schaengold  
Study of severe emotional and mental disturbances in children 6-16 years in a hospital setting; individual, group, occupational and art therapies. D.C. General Hospital
- 382 **Clinical Psychiatry (5)** Waldrop  
Participation in clinical care of patients hospitalized for emotional and mental disturbances; individual and group therapy, somatic therapies, psychodrama. St. Elizabeths Hospital
- 383 **Psychiatric Day-care (10)** Gans  
Active participation in a program of psychiatric rehabilitation directed toward return of the patient to productivity in his community; emphasizing group living experiences which are corrective, stabilizing, and adaptive, as well as individual and group psychotherapy.
- 384 **Geriatric Psychiatry (5)** Waldrop  
Participation in care and rehabilitative efforts with elderly inpatients having psychiatric and other incapacities. St. Elizabeths Hospital
- 385 **Schizophrenic Reactions (10)** Bullard  
Psychotherapy and ward management of schizophrenic patients in a private sanitarium.
- 386 **Psychiatric Research (5)** Waldrop  
Participation in existing research programs involving clinical and experimental investigations of human behavior.
- 387 **Clinical Psychiatry (10)** Rankin  
Participation in care of inpatients and outpatients; diagnostic evaluations; individual and group psychotherapies, somatic therapies. University Hospital
- 388 **The Chronic Patient (Research) (10)** Meyersburg  
Continuing research into the social, anthropological and psychological factors influencing the long-term care of patients with chronic diseases.
- 389 **Studies in Alcoholism (10)** Kiracofe  
Participation in diagnostic evaluation and treatment of the alcoholic out-patient.
- 390 **Psychiatric Aspects of Criminal Behavior (Research) (5)** S. Yochelson  
Detailed studies of the social, psychiatric, and constitutional factors producing criminal behavior; psychologic testing.
- 391 **Constitutional Psychiatry (Research) (10)** S. Yochelson  
Guided research in comatotypy, genetics, encephalography, and sensory deprivation, with particular emphasis on the criminal.
- 392 **Administrative Psychiatry (10)** Cameron  
An apprenticeship to the administrator of a large public mental hospital.
- 393 **Psychosomatic Medicine (5)** Rubin  
Participation in diagnosis, evaluation, and treatment of patients with psychosomatic ailments.

## Radiology\*

*Professor W.W. Stanbro (Chairman)*

*Associate Professor C.F. Murphy*

*Associate Clinical Professors H.J. Kicherer, Joseph LoPresti, R.F. Dobbins, Albert Bauer, J.G. Maier*

*Assistant Professors W.J. Nelson, W.B. McAvoy*

*Assistant Clinical Professors Charlotte Donlan, S.R. Bersack, H.L. Berman, J.T. Brennan, A.C. Wyman, D.B. Sodee (Nuclear Medicine), Bela Gondos, J.B. Johnston, Jr., S.W. Smith, Marion Faris, H.C. Harrell*

*Instructor H.M. Hagen*

*Clinical Instructors George Tievsky, U.V. Wilcox II, C.M. Weber, Zeki Erim, M.A. Thomas, Frederick Deck, Margaret Mones, Michael Vermess*

- † 301 **Radiology (1)** The Staff  
X-ray production, methods of examination, normal and pathological X-ray findings of the various body systems, special studies, introduction to radiation therapy and radioisotopes.
- 351 **Radiology (2)** The Staff  
Advanced X-ray diagnosis and radiation therapy.
- 380 **Radiology (5)** Murphy  
Each student works with all department physicians sequentially. Daily film conferences. Each student discusses one diagnostic subject in depth, using films from the teaching file. All attend scheduled department conferences. Familiarization and fluoroscopy, radiation therapy techniques in philosophy, radioisotope use, and radiation safety is achieved.
- 381 **Diagnostic and Therapeutic Radiology (5)**  
Observation of fluoroscopic procedures and participation in film reading sessions; observation of techniques and rationale of radiation therapy. Washington Hospital Center
- 382 **General Radiology (5)** E. Miller  
The student participates with the radiologist in the performance of his duties in diagnosis and therapy. The student will have an opportunity to study in depth one approved subject of special interest to him. Room and board furnished. Veterans Administration Center, Martinsburg, W. Va.

## Surgery\*

*Professors Brian Blades (Chairman), C.T. Klopp, J.P. Adams, G.S. Letterman*

*Clinical Professors W.S. McCune, V.M. Iovine, Alec Horwitz, G.A. Higgins, Jr.*

*Associate Professors P.C. Adkins, H.C. Pierpont, T.C. Alford*

*Associate Clinical Professors H.L. Feffer, J.R. Thistlethwaite, Don Wenger, J.S. Neviasser, L.T. Peterson, Thomas Whelan, D.C.*

\* Staff of Instruction for the academic year 1965-66.

† Required course for medical students.

Wherry, E.A. Gould, Maxine Schurter, J.G. Randolph

*Assistant Professors* N.P.D. Smyth, P.E. Shorb, Jr., N.T. Tsangaris, Allan Hall, Peter Kenmore

*Assistant Clinical Professors* Thomas Bradley, Murdock Head, C.W. Metz, Jr., R.G. Kindred, Ernest Brav, L.B. Burk, Jr., William Ferguson, R.L. Dow, J.M. Keshishian, J.J. Weinstein, Isabella Harrison, Charles Keck, James T. Estes, E. H. Bremer, F. B. Brandt, J.W. Canter, S.G. Mead (*Oral Surgery*), J.B. Harrell

*Instructors* J.N. Bhayana, Lawrence Michaels

*Clinical Instructors* C.D. Briggs, J.F. Conlon, D.C. Richtmeyer, Leon Gerber, A.B. Rohrbaugh, Jr., B.G. Brown, J.D. Hoyle, N.H. Isaacson, D.P. McCarty, L.R. Perna, T.M. Wright, J.H. Sager, Frances Brennecke, J.P. Baker, H.E. Lane, Jr., Robert Engler, Gerard Inguagiato, J.E. Peterson, Charles Rickerich, J.R. McClelland, S.M. Kirson, K.A. Peterson

*Special Lecturers* D.F. Lynch, S.V. Mead

- \* 301 **Lectures in Surgery** The Staff
- \* 302 **Major Clinical Situations (Surgery) (4)** The Staff  
Lectures and demonstrations in surgical diagnosis and treatment.
- \* 303 **Clinical Clerkship I (10)** The Staff  
Twelve weeks at University, V.A., D.C. General hospitals, and Washington Hospital Center.
- \* 304 **Clinical Clerkship II (5)** The Staff  
An extension of Clinical Clerkship I.
- 351 **Forensic Medicine (2)** Sharpe, Head  
Examples drawn from the range of problems arising when the professional interests of lawyers and physicians overlap. Problem contexts include malpractice, personal injury litigation, licensure and discipline, ethics and economics, hospitals and other institutions of practice, and compelled treatment. Open to junior medical students. (Fall)
- 380 **General Surgery (5)** Iovine  
Participation in general care of selected surgical patients, assigned reading. University Hospital
- 381 **General Surgery (5)** McCune  
Participation in general care of selected surgical patients, assigned reading, experimental surgery for pancreatic disease. University Hospital
- 382 **Head and Neck Surgery (5)** Klopp  
Study of new patients and follow-up of treated cases, minor surgical procedures, observation of operating room procedures, assigned reading.
- 383 **Thoracic Surgery Research (10)** Blades, Adkins  
Studies of the basic principles of research in thoracic surgery, assigned reading.
- 384 **Clinical Research in Surgery: Mastectomy (5 or 10)** Tsangaris  
Evaluation of factors influencing development of post-mastectomy edema of arm and evaluation of clinical status with venograms and lymphograms.

\* Required course for medical students.



- 385 **Experimental Research in Surgery: Wound Healing and Wound Infection (5)** Shorb  
Experimental surgical bacteriology; study of bacterial, wound, and systematic factors influencing surgical wound infection.
- 392 **Orthopedic Surgery (5)** Adams  
Participation in total care program of orthopedic patients; daily rounds, conferences, and seminars. V.A. Hospital
- 393 **General Surgery (10)** Hall  
Participation in surgical care program in a community hospital; emergency room service includes major trauma; pediatric surgery. Fairfax Hospital
- 394 **Pediatric Surgery (5)** Randolph  
Participation in an active, closely supervised surgical service for infants and children, including congenital defects and neoplasms. Diagnostic studies, preoperative, and postoperative care, and operating room procedures. Children's Hospital

## Urology\*

*Professor L.R. Culbertson (Chairman)*

*Clinical Professor E.E. Ferguson*

*Associate Clinical Professors W.D. Jarman, F.T. Reuter*

*Assistant Clinical Professors Gilbert Ottenberg, G.R. MacDonald, H. A. Goldberg*

*Clinical Instructors H.D. Wolff, Jr., H.P. Dorman, W.D. Oldham, J.C. Kenealy, F.P. Chiaramonte, Gyorgy Dudas-Gyorki, H.J. Klaproth, R.C. Rhame, R.E. Ware, W.L. Banfield*

- † 301 **Urology (1)** Culbertson and Staff  
Lectures covering the entire field of urology including diagnosis, treatment, and morbid pathology.
- 380 **Clinical Urology (5)** Reuter  
Instruction in outpatient and diagnostic urology, including cystoscopy and radiographic procedures. University Hospital
- 381 **Clinical Urology (5)** Culbertson  
Observation of urologic conditions and procedures, including endoscopy; radiologic and pathologic studies; collateral reading. University Hospital
- 382 **Clinical Urology (5)** Culbertson  
Observation of urologic conditions and procedures, including endoscopy; radiologic and pathologic review; assigned reading. V.A. Hospital

\* Staff of Instruction for the academic year 1965-66.

† Required course for medical students.

## THE UNIVERSITY

### HISTORY AND ORGANIZATION

THE GEORGE WASHINGTON UNIVERSITY had its beginning in 1821 as The Columbian College in the District of Columbia. The name of the institution was changed in 1873 to Columbian University and in 1904 to The George Washington University. The debt of the University to George Washington whose name it bears is an intangible one.

George Washington, as President and as private citizen, had urgently insisted upon the establishment of a National University in the Federal City. There he hoped that, while being instructed in the arts and sciences, students from all parts of the country would acquire the habits of good citizenship, throwing off local prejudices and gaining at first hand a knowledge of the practice, as well as the theory, of republican government. To further the materialization of his hopes, Washington left a bequest of fifty shares of The Potomac Company "towards the endowment of a University to be established within the limits of the District of Columbia, under the auspices of the General Government, if that government should incline to extend a fostering hand towards it." The Congress never extended "a fostering hand." The Potomac Company passed out of existence, and Washington's bequest became worthless.

Fully conscious of Washington's hopes, but motivated primarily by a great missionary urge and the need for a learned clergy, a group of dedicated ministers and laymen sponsored a movement for the establishment of a college in the District of Columbia. Inspired largely by the zeal and energy of the Reverend Luther Rice, they raised funds for the purchase of a site and petitioned Congress for a charter. After much delay and amendment, Congress granted a charter which was approved by President Monroe on February 9, 1821. To safeguard the College's nonsectarian character it provided "That persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College, or denied any of the privileges, immunities, or advantages therefore, for or on account of his sentiments in matters of religion."

During the entire time when the institution was known as Columbian College, its activities were centered on College Hill, a tract of forty-six and a half acres between the present Fourteenth and Fifteenth Streets extending north from Florida Avenue somewhat beyond Columbia Road. The Medical School was located downtown. For the better part of the Columbian University period, the buildings of the University were situated along H Street between Thirteenth and Fifteenth Streets. The Medical School group still remains there.

During the last half century the University's present plant has been developed in that section of the old First Ward familiarly known as

"Foggy Bottom," between Nineteenth and Twenty-fourth Streets, south of Pennsylvania Avenue. Within a few squares are the White House, the Department of the Interior, the State Department, the World Bank, and many other governmental offices and international agencies. The area is not without its reminders of historic interest to the University. President Monroe who signed the Charter lived at 2017 Eye Street. The first President of the Board of Trustees, the Reverend Obadiah B. Brown, was for fifty years the pastor of a church at Nineteenth and Eye Streets, and Washington selected Twenty-third and E Streets as the site of the National University he had hoped to see established.

The University as it is now organized consists of Columbian College of Arts and Sciences, which offers work leading to Associate's, Bachelor's, and Master's degrees; the Graduate Council, which offers work leading to the degree of Doctor of Philosophy; the professional schools, which include Medicine; Law; Engineering and Applied Science; Education; and Government, Business, and International Affairs; the College of General Studies; the Division of University Students; the Division of Aerospace Studies; and the Summer Sessions.

The George Washington University is privately endowed and is governed by a self-perpetuating Board of Trustees of which the president is an ex officio member.

#### ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This fact is important to students who wish to transfer credits from one institution to another. The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board. The Department of Chemistry is on the approved list of the American Chemical Society.

The School of Medicine has had continuous approval by the Council on Medical Education of the American Medical Association and the Association of American Medical Colleges. The degree of the School of Medicine is recognized by all State Examining Boards.

#### THE BOARD OF TRUSTEES 1965-66

Edward Karrick Morris, LL.D., *Chairman*  
Charles Emory Phillips, LL.B., LL.M., *Vice Chairman*  
Godfrey Leon Munter, A.B., LL.B., LL.D., *Secretary*  
James Matlack Mitchell, A.M., *Assistant Secretary*

Walter Maximillian Bastian, LL.B., LL.D.  
Wiley Thomas Buchanan, Jr., LL.D.  
George A. Butler, LL.B.  
Leonard Carmichael, Ph.D., Sc.D., LL.D., Litt.D., L.H.D., D.C.L.  
Eugene Cassin Carusi, A.M., J.D.  
Miss Jacqueline Cochran, D.H.L., LL.D., Sc.D.  
Oswald Symister Colclough, B.S., LL.B., LL.D., Sc.D., *Acting President of the University, ex officio*



- \* Donald C. Cook, A.B., M.B.A., J.D., LL.M.
- R. Roy Dunn
- Newell Windom Ellison, A.B., LL.B., LL.D.
- Robert Vedder Fleming, LL.D., *Chairman Emeritus*
- Mrs. Katharine Graham, A.B.
- Brooks Hays, A.B., LL.B., LL.D.
- John Edgar Hoover, LL.M., LL.D.
- Joseph D. Hughes, B.S., LL.B., LL.M., LL.D.
- Alfred Henry Lawson, LL.B., LL.D.
- Franklin Jerome Lunding, LL.B., LL.D.
- John Keown McKee
- Benjamin Mosby McKelway, Litt.D.
- \* Robert Daniel Murphy, LL.B., LL.M., LL.D.
- Nelson Paul Poynter, A.M., Litt.D.
- \* Charles Sylvanus Rhyne, LL.B., D.C.L., LL.D.
- Carleton D. Smith
- Sidney William Souers, A.B., LL.D.
- Lewis L. Strauss, Sc.D., LL.D., L.H.D.
- L. Corrin Strong, Ph.B., LL.D.
- James Cornelius Van Story, Jr., A.M.
- James Russell Wiggins, LL.D.
- \* John Johnston Wilson, LL.B.
- Watson W. Wise, Ph.B.
- \* James Otis Wright, B.S., LL.B.

#### HONORARY TRUSTEES

- Mrs. Joshua Evans, Jr., A.B., Ed.D.
- Charles Carroll Glover, Jr., A.M., LL.B., LL.D.
- Ulysses S. Grant, 3d, B.S., Graduate United States Engineers School, LL.D., Sc.D.
- Gilbert Grosvenor, A.M., LL.D., Litt.D., Sc.D.
- Alexander Wetmore, Ph.D., Sc.D.
- Charles Stanley White, M.D., Sc.D.
- Lloyd Bennett Wilson

#### OFFICERS OF ADMINISTRATION†

##### THE UNIVERSITY

- Oswald Symister Colclough, B.S., LL.B., LL.D., Sc.D., *Acting President*
- John Anthony Brown, Jr., A.M., L.H.D., LL.D., *Vice President and Dean of Faculties*
- Henry William Herzog, B.S., *Vice President and Treasurer*

##### OFFICE OF THE PRESIDENT

- William Parkhurst Smith, Jr., A.B., M.B.A., *Executive Assistant to the President*

\* Nominated by the alumni.

† The President of the University, the Dean of Faculties, the Registrar of the University, and the Director of Admissions of the University are ex officio members of all faculties of the colleges, schools, and divisions of the University.

Officers of Administration for the year 1964-65.

OFFICE OF THE VICE PRESIDENT AND DEAN OF FACULTIES

Harold Frederick Bright, Ph.D., *Associate Dean of Faculties*  
Claud Max Farrington, A.M., *Director of Special Projects*  
Sally Oleon Shames, Ph.D., *Assistant to the Vice President  
and Dean of Faculties*  
Tamis Wilson Borden, A.B., *Administrative Secretary*

OFFICE OF THE VICE PRESIDENT AND TREASURER

William David Johnson, B.S., *Comptroller*  
Humbert John Cantini, Jr., LL.B., *Assistant Treasurer*  
Margaret Payne Greene, B.S., *Assistant Treasurer, Contract Research*  
Maurice Kingsley Heartfield, Jr., A.B., *Assistant Treasurer; Director,  
Student Financial Aid*  
John Collum Einbinder, A.B. in Govt., *Business Manager*

Blaine Richard Berg, M.S., *Director of Public Relations*  
Paul Vernon Bissell, Ph.D., *Dean of Men; Director of Veterans Edu-  
cation*  
Richard Bernard Castell, A.B., M.D., *Director of Health Services*  
Charles William Cole, Ph.D., *Dean of the Summer Sessions*  
Robert Faris, B.S., *Director of Men's Athletics*  
Warren Gould, A.M., *Assistant Vice President—Resources*  
Frederick Russell Houser, A.M. in Govt., *Registrar*  
Elmer Louis Kayser, Ph.D., LL.D., *University Historian*  
Virginia Randolph Kirkbride, A.M., Ed.D., *Dean of Women*  
John Francis Latimer, Ph.D., Litt.D., *Director of Foreign Student  
Affairs; University Marshall*  
John Russell Mason, A.M., M.S. in L.S., *Librarian; Curator of Art*  
Joseph Young Ruth, A.B., *Director of Admissions*  
Joseph Richard Sizoo, A.M., D.D., Litt.D., LL.D., L.H.D., S.T.D.,  
*Director of University Chapel*  
Loretta May Stallings, A.M., *Director of Women's Athletics*  
Stanley Tracy, LL.B., *Director of Alumni Relations*  
Benjamin Douglas Van Evera, Ph.D., Sc.D., *Dean for Sponsored Re-  
search*  
Wallace Edward Weems, Jr., A.B., *Director of Personnel Services*

THE SCHOOL OF MEDICINE AND THE UNIVERSITY HOSPITAL

John Parks, M.S., M.D., *Dean of the School of Medicine*  
Clayton Bernard Ethridge, M.D., *Associate Dean of the School of  
Medicine; Medical Director, University Hospital; Director, Post-  
graduate Medical Education*  
Angus MacIvor Griffin, Ph.D., *Associate Dean of the School of Medi-  
cine*  
Alvin Edward Parrish, M.D., *Associate Dean of the School of Medi-  
cine*  
Victor Frederick Ludewig, B.S., *Administrator of the University  
Hospital*

## THE SCHOOL OF MEDICINE

### Faculty and Staff of Instruction\*

#### EMERITI

- Errett Cyril Albritton, A. B., M.D., *Professor Emeritus of Physiology*  
Harry Ford Anderson, M.D., *Professor Emeritus of Dermatology and Syphilology*  
Ralph Gregory Beachley, M.D., D.P.H., *Professor Emeritus of Clinical Public Health Practice*  
Walter Andrew Bloedorn, A.M., M.D., Sc.D., *Professor Emeritus of Medicine*  
Daniel LeRay Borden, M.D., A.M., Sc.D., *Professor Emeritus of Clinical Surgery*  
Roger Morrison Choisser, B.S., M.D., *Professor Emeritus of Pathology*  
Ronald Atmore Cox, M.D., A.B., *Professor Emeritus of Ophthalmology*  
Henry Luran Darner, A.B., M.D., *Professor Emeritus of Clinical Obstetrics and Gynecology*  
Paul Frederick Dickens, M.D., *Professor Emeritus of Clinical Medicine*  
William Herndon Jenkins, M.D., *Professor Emeritus of Otolaryngology*  
Chester Elwood Leese, Ph.D., *Professor Emeritus of Physiology*  
Edward Lewis, M.D., *Professor Emeritus of Clinical Pediatrics*  
Preston Alexander McLendon, B.S., M.D., *Professor Emeritus of Pediatrics*  
Daniel Bruce Moffett, A.B., M.D., *Professor Emeritus of Otolaryngology*  
Margaret Mary Nicholson, A.B., M.D., *Professor Emeritus of Clinical Pediatrics in Residence*  
George Nordlinger, A.B., M.D., *Professor Emeritus of Clinical Obstetrics and Gynecology*  
Leland Wilbur Parr, Ph.D., *Professor Emeritus of Bacteriology*  
Frederick A. Reuter, M.D., *Professor Emeritus of Urology*  
Joseph Hiram Roe, Ph.D., *Professor Emeritus of Biochemistry*  
George Byron Roth, A.B., M.D., *Professor Emeritus of Pharmacology*  
Thomas Carlton Thompson, B.S. in Med., M.D., *Professor Emeritus of Clinical Urology*  
Charles Stanley White, M.D., Sc.D., *Professor Emeritus of Surgery*

#### ACTIVE

- Howard Richard Abel, A.B., M.D., *Clinical Instructor in Medicine*  
Theodore Judson Abernethy, B.S., M.D., *Associate Clinical Professor of Medicine*

\* The Faculty and Staff of Instruction listed here and at the head of each department is for the academic year 1965-66.



Kristoff Abraham, M.D., *Clinical Instructor in Neurology*  
 Joseph Abrahams, M.D., *Assistant Clinical Professor of Psychiatry*  
 Herbert Abramson, A.M., M.D., *Assistant Clinical Professor of Medicine*  
 John Pletch Adams, B.S., M.D., *Professor of Orthopedic Surgery*  
 Richard Henry Adamson, Ph.D., *Assistant Professorial Lecturer in Physiology*  
 Edward Adelson, B.S., M.D., *Associate Clinical Professor of Medicine*  
 Paul Charles Adkins, A.B., M.D., *Associate Professor of Surgery*  
 Marvin Leon Adland, B.S., M.D., *Associate Clinical Professor of Psychiatry*  
 Lewis Affronti, Ph.D., *Associate Professor of Microbiology*  
 Robert Wayne Albers, Ph.D., *Professorial Lecturer on Biochemistry of the Brain*  
 Solomon Naphtali Albert, A.B., M.D., *Assistant Clinical Professor of Anesthesiology*  
 Theodore Crandall Alford, A.B., M.D., *Associate Professor of Surgery*  
 Frank Duane Allan, Ph.D., *Associate Professor of Anatomy*  
 Melvin Gustavus Alper, A.B., M.D., *Assistant Clinical Professor of Ophthalmology*  
 Louis Katz Alpert, B.S., M.D., *Professor of Medicine*  
 Seymour Alpert, A.B., M.D., *Professor of Anesthesiology*  
 Alice Altstatt, A.M., M.D., *Instructor in Anesthesiology*  
 Barbara Olson Alving, Ph.D., *Assistant Professorial Lecturer in Physiology*  
 Ralph Eric Alving, A.B., M.D., *Assistant Professorial Lecturer in Physiology*  
 James Francis Ambury, B.S., M.D., *Assistant Clinical Professor of Medicine*  
 Harvey Ammerman, B.S., M.D., *Associate Clinical Professor of Neurological Surgery*  
 Leo David Amorosi, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*  
 Theodore Herbert Anders, A.B., M.D., *Clinical Instructor in Pediatrics*  
 Robert Harper Anderson, M.D., *Clinical Instructor in Pediatrics*  
 William Staton Anderson, A.B., M.D., *Clinical Professor of Pediatrics*  
 John Lawrence Angel, Ph.D., *Professorial Lecturer in Anatomy*  
 Manuel Angoso-Dufourcq, A.B., M.D., *Clinical Instructor in Medicine*  
 Ronald Alan Apter, M.D., *Assistant Clinical Professor of Medicine*  
 Reza Arasteh, Ph.D., *Special Lecturer in Psychiatry*  
 Irwin Ardam, A.B., M.D., *Assistant Clinical Professor of Medicine*  
 Malcolm Stewart Artenstein, A.B., M.D., *Assistant Clinical Professor of Medicine*  
 Edwin Fjelde Aune, M.D., *Clinical Instructor in Medicine*  
 Silas Babin, Jr., M.D., *Assistant Clinical Professor of Medicine*  
 Frank Solomon Bacon, B.S., M.D., *Associate Clinical Professor of Medicine*  
 Alfred Baer, A.B., M.D., *Assistant Clinical Professor of Medicine*  
 William Eldridge Bageant, M.D., *Clinical Instructor in Anesthesiology*  
 John Martyn Bailey, Ph.D., *Associate Professor of Biochemistry*  
 William Otis Bailey, Jr., M.D., *Assistant Clinical Professor of Medicine*  
 James Pray Baker, A.B., M.D., M.S. in Surg., *Clinical Instructor in Surgery*

William George Ballinger, A.B., M.D., *Assistant Clinical Professor of Dermatology*  
 Giuseppe Balsamo, Laurea in Medicinae Chirurgia, *Assistant Clinical Professor of Physical Medicine and Rehabilitation*  
 William Landon Banfield, A.B., M.D., *Clinical Instructor in Urology*  
 Louis Sol Baron, Ph.D., *Special Lecturer on Microbial Genetics*  
 Solomon Efrem Barr, A.B., M.D., *Assistant Clinical Professor of Medicine*  
 Andre Barrabini, M.D., *Clinical Instructor in Medicine*  
 John William Barrett, M.D., *Clinical Instructor in Neurology and Neurological Surgery*  
 Robert Henry Barter, B.S., M.D., *Professor of Obstetrics and Gynecology*  
 Walter Earl Barton, B.S., M.D., *Special Lecturer in Psychiatry*  
 John Charles Bartone, Ph.D., *Assistant Professor of Anatomy*  
 Jeanne Cecile Bateman, A.B., M.D., *Clinical Instructor in Medicine*  
 Harry Clark Bates, Jr., B.S., M.D., *Assistant Clinical Professor of Medicine*  
 Albert Bauer, M.D., *Associate Clinical Professor of Radiology*  
 Emil Herbert Bauersfeld, A.B., M.D., *Assistant Clinical Professor of Medicine*  
 Kenneth Louis Becher, M.D., Ph.D., *Assistant Professor of Medicine*  
 Virginia Patterson Beelar, A.B., M.D., *Assistant Clinical Professor of Medicine*  
 Sammye Belcher, B.S., M.D., *Clinical Instructor in Medicine*  
 Samuel Michael Belinski, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*  
 Robert Reid Belton, A.B., M.D., Dr.Med., *Associate Clinical Professor of Medicine*  
 Ruth Boschwitz Benedict, A.B., M.D., *Assistant Clinical Professor of Medicine*  
 Maria Henke Benzinger, M.D., Dr.Med., *Assistant Clinical Professor of Anesthesiology*  
 Roger Bergstrom, M.D., *Clinical Instructor in Pediatrics*  
 David Kip Berler, A.B., M.D., *Clinical Instructor in Ophthalmology*  
 Robert William Berliner, B.S., M.D., *Special Lecturer in Medicine (Renal Disease)*  
 Harry Louis Berman, B.S., M.D., *Assistant Clinical Professor of Radiology*  
 Sidney Berman, B.S., M.D., *Clinical Professor of Psychiatry*  
 Solomon Rodney Bersack, B.S., M.D., *Assistant Clinical Professor of Radiology*  
 Christopher Theodore Bever, A.B., M.D., *Associate Clinical Professor of Psychiatry*  
 Joginder Nath Bhayana, Med.B., B.Surg., *Instructor in Surgery*  
 Lewis Henry Biben, M.D., *Clinical Instructor in Medicine*  
 Roland Essig Bieren, M.D., *Associate Clinical Professor of Obstetrics and Gynecology*  
 Catharine Birch, A.B., M.D., *Assistant Clinical Professor of Otolaryngology*  
 Emilie Annabelle Black, B.S., M.D., *Clinical Instructor in Pediatrics*  
 Alden Hirsh Blackman, A.B., M.D., *Instructor in Medicine*  
 Theodore Fisher Blackwelder, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*  
 Brian Blades, A.B., M.D., *Lewis Saltz Professor of Surgery*

Jerome Bernard Block, A.B., M.D., *Assistant Professorial Lecturer in Physiology*  
 Joe Morris Blumberg, B.S., M.D., *Clinical Professor of Pathology*  
 Lester Sylvan Blumenthal, A.B., M.D., M.S. in Med., *Assistant Clinical Professor of Medicine*  
 Norman Kay Bohrer, M.D., *Clinical Instructor in Medicine*  
 Frank Joseph Borsody, A.B., M.D., *Clinical Instructor in Medicine*  
 Ronald Jack Bortnick, A.B., M.D., *Clinical Instructor in Neurological Surgery*  
 John Henry Bouma, A.B., B.S., M.D., *Assistant Clinical Professor of Psychiatry*  
 Maxwell Boverman, A.B., M.D., *Clinical Instructor in Psychiatry*  
 Thomas Bradley, A.B., M.D., *Assistant Clinical Professor of Surgery*  
 Roscoe Brady, Jr., M.D., *Professorial Lecturer on Biochemistry of the Brain*  
 Frederick Bertram Brandt, B.S., M.D., *Assistant Clinical Professor of Surgery*  
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 Ernst Bremer, Dr. Med., *Assistant Clinical Professor of Surgery*  
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 James Thomas Brennan, A.B., M.D., *Assistant Clinical Professor of Radiology*  
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 Crenshaw Douglas Briggs, B.S., M.D., *Clinical Instructor in Surgery*  
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 Albert Seymour Bright, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*  
 Alfred Brigulio, M.D., *Associate Clinical Professor of Medicine; Associate University Physician*  
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 Bernard Beryl Brodie, Ph.D., *Professorial Lecturer in Pharmacology*  
 Bertram Brown, A.B., M.D., M.P.H., *Assistant Clinical Professor of Psychiatry*  
 Brooks Gideon Brown, M.D., *Clinical Instructor in Surgery*  
 Crawford Southwell Brown, A.B., M.D., *Assistant Clinical Professor of Dermatology*  
 Halla Brown, M.D., *Clinical Professor of Medicine*  
 Jack Harold Upton Brown, Ph.D., *Special Lecturer in Physiology*  
 Raymond Nathan Brown, M.D., *Assistant Clinical Professor of Anatomy*  
 Thomas McPherson Brown, A.B., M.D., *Eugene Meyer Professor of Medicine*  
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 Dexter Means Bullard, Ph.B., M.D., *Clinical Professor of Psychiatry*  
 Lloyd Byron Burk, Jr., A.B., M.D., *Assistant Clinical Professor of Surgery*  
 James Theodore Burns, M.D., *Assistant Clinical Professor of Medicine*  
 William Wesley Burr, Jr., Ph.D., M.D., *Professorial Lecturer on Isotopes*  
 Boyd Lee Burris, B.S., M.D., *Assistant Clinical Professor of Psychiatry*



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 Robert Neil Butler, A.B., M.D., *Assistant Clinical Professor of Psychiatry*  
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 Paul Calabrisi, Ph.D. (Cantab.), *Professor of Anatomy*  
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 Dwight Callaghan, B.S., M.D., *Associate Clinical Professor of Obstetrics and Gynecology*  
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 Marie Mullaney Cassidy, Ph.D., *Assistant Professor of Physiology*  
 Richard Bernard Castell, A.B., M.D., *Assistant Clinical Professor of Medicine; University Physician; Director, Health Services*  
 William Paxson Chalfant, Jr., M.D., *Assistant Clinical Professor of Ophthalmology*  
 Frederic Dunbar Chapman, A.B., M.D., C.M., *Assistant Clinical Professor of Medicine*  
 George Allyn Chapman, B.S., M.D., *Assistant Clinical Professor of Medicine*  
 Jacob Bernard Chassan, Ph.D., *Assistant Clinical Professor of Psychiatry (Biostatistics)*  
 Francis Paul Chiamonte, A.B., M.P.H., M.D., *Clinical Instructor in Urology*  
 Paul Chodoff, A.B., M.D., *Associate Clinical Professor of Psychiatry*  
 John Bert Christensen, Ph.D., *Associate Professor of Anatomy*  
 Francis Chucker, M.D., *Clinical Instructor in Medicine*  
 Lloyd Eugene Church, D.D.S., Ph.D., *Assistant Professorial Lecturer in Anatomy*  
 Esat Ozcan Cirpili, M.D., *Visiting Assistant Professor of Physiology*  
 Harold William Clark, Jr., Ph.D., *Assistant Research Professor of Medicine (Biochemistry)*  
 Hugh Gambel Clark, A.B., M.D., *Assistant Clinical Professor of Pediatrics*  
 Charles Seymour Coakley, M.D., *Professor of Anesthesiology*  
 Robert Norwood Coale, B.S., M.D., *Assistant Clinical Professor of Medicine*  
 George Joel Cohen, M.D., *Assistant Clinical Professor of Pediatrics*  
 Victor Hugo Cohn, Jr., Ph.D., *Associate Professor of Pharmacology*  
 Allan Bertram Coleman, M.D., *Assistant Clinical Professor of Pediatrics*  
 Peter Diacoumis Comanduras, B.S., M.D., M.S. (Med.), *Special Lecturer on Gastroenterology*  
 Joseph Francis Conlon, D.D.S., *Clinical Instructor in Dental Surgery*  
 Audrey Connor, A.B., M.D., *Clinical Instructor in Medicine*  
 Steven Joseph Conway, B.S., M.D., *Clinical Instructor in Medicine*  
 Charles Barrie Cook, B.S., M.D., *Assistant Clinical Professor of Pathology*  
 Charles David Cooper, A.B., M.D., *Assistant Clinical Professor of Medicine*  
 William Hurlbert Cooper, A.B., M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*

- Bernard Robert Cooperman, A.B., M.D., *Clinical Instructor in Medicine*
- Milton Corn, B.S., M.D., *Associate Professor of Medicine*
- Frank Duncan Costenbader, B.S., M.D., *Clinical Professor of Ophthalmology*
- Louis Aleck Craig, Jr., A.B., M.D., *Assistant Clinical Professor of Medicine*
- Elizabeth Amanda Crisp, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Jeremiah Keith Cromer, M.D., A.B., *Associate Clinical Professor of Obstetrics and Gynecology*
- William Holmes Crosby, A.B., M.D., *Special Lecturer on Hematology*
- Jack Crowell, B.S., M.D., *Assistant Clinical Professor of Medicine*
- Leon Richard Culbertson, B.S., M.D., *Clinical Professor of Urology*
- Edward Earl Cunningham, M.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*
- James Allen Curtin, A.B., M.D., *Associate Professor of Medicine*
- Gilbert Bernard Cushner, M.D., *Clinical Instructor in Medicine*
- Leon Cytryn, M.D., *Assistant Professor of Pediatric Psychiatry*
- Gordon Walford Daisley, Jr., A.B., M.D., *Clinical Instructor in Pediatrics*
- Abraham Wolfe Danish, A.B., M.D., *Assistant Clinical Professor of Medicine*
- Donald William Datlow, M.S., M.D., *Clinical Instructor in Medicine*
- Audrey Kennon Davis, B.S., Ph.D., *Professorial Lecturer in Physiology*
- David Stanley Davis, A.B., M.D., *Assistant Clinical Professor of Medicine*
- Lee Washington Davis, A.B., M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*
- Richard LaVern Davis, A.B., M.D., *Clinical Instructor in Pathology*
- William Joseph Graham Davis, A.B., M.D., *Assistant Clinical Professor of Ophthalmology*
- \* Clarke Davison, Ph.D., *Professor of Pharmacology*
- Robert Day, A.B., M.D., *Assistant Clinical Professor of Ophthalmology*
- Edwin Justin Dealy, A.B., M.D., *Clinical Instructor in Anesthesiology*
- Frederick Deck, B.S., M.D., *Clinical Instructor in Radiology*
- Ronald Stuart Deitch, A.B., M.D., *Clinical Instructor in Ophthalmology*
- Stephen William Dejter, A.B., M.D., *Assistant Clinical Professor of Medicine*
- Anatole Stephen Dekaban, M.D., Ph.D., *Assistant Clinical Professor of Neurology*
- Dermot Joseph Demis, Ph.D., M.D., *Assistant Clinical Professor of Dermatology*
- Herbert Harold Diamond, M.D., *Clinical Instructor in Pediatrics*
- Richard Francis Dobbins, A.B., M.D., *Associate Clinical Professor of Radiology*
- Robert Jay Dobrow, A.B., M.D., *Clinical Instructor in Medicine*
- Oscar Irving Dodek, Jr., A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*
- Samuel Mayer Dodek, M.D., A.M., *Clinical Professor of Obstetrics and Gynecology*
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\* On sabbatical leave 1965-66.

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 Robert LeRoy Dow, A.B., M.D., *Assistant Clinical Professor of Orthopedic Surgery*  
 Alan McCulloch Drummond, A.B., M.D., *Assistant Clinical Professor of Psychiatry*  
 John William DuChez, M.D., *Associate Clinical Professor of Medicine*  
 Gyorgy Dudas-Gyorki, M.D., *Clinical Instructor in Urology*  
 Virginia Duggins, A.B., M.D., *Assistant Clinical Professor of Neurology*  
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 William Rankin Duryee, Ph.D., *Research Professor of Experimental Pathology*  
 James Albert Dusbabek, M.D., *Clinical Professor of Obstetrics and Gynecology*  
 Robert Francis Dyer, A.B., M.D., *Assistant Clinical Professor of Medicine; Associate University Physician*  
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 David Eden, A.B., M.D., *Associate Clinical Professor of Psychiatry*  
 Wilfred Russell Ehrmantraut, B.S., M.D., *Assistant Clinical Professor of Medicine*  
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 Joseph Thomas English, A.B., M.D., *Assistant Clinical Professor of Psychiatry*  
 William Francis Enos, A.B., M.D., *Assistant Clinical Professor of Pathology*  
 Burton Seymour Epstein, A.B., M.D., *Assistant Professor of Anesthesiology*  
 Charles Joseph Epstein, A.B., M.D., *Professorial Lecturer on Inherited Metabolic Diseases*  
 Jerome Harold Epstein, A.M., M.D., *Assistant Clinical Professor of Medicine*  
 Julius Robert Epstein, M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*  
 Zeki Erim, A.B., M.D., *Clinical Instructor in Radiology*  
 Richard Vernon Erkenbeck, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*  
 James Tilford Estes, M.D., *Assistant Clinical Professor of Surgery*  
 Clayton Bernard Ethridge, M.D., *Professor of Medicine; Associate Dean of the School of Medicine; Medical Director, University Hospital*  
 John McCallum Evans, A.B., M.D., *Professor of Medicine*  
 Theodore Myles Farber, Ph.D., *Assistant Research Professor of Pharmacology*



Marion Dees Miller Faris, A.B., M.N., M.D., *Assistant Clinical Professor of Radiology*  
 Otis Rhanor Farley, A.B., M.D., *Associate Clinical Professor of Medicine*  
 John Anthony Farrell, M.B., M.D., *Assistant Clinical Professor of Psychiatry*  
 John Francis Fazekas, M.D., *Associate Clinical Professor of Neurology*  
 Henry Leon Feffer, A.B., M.D., *Associate Clinical Professor of Orthopedic Surgery*  
 James Joseph Feffer, A.B., M.D., *Clinical Professor of Medicine*  
 Morris Feitel, M.D., *Clinical Instructor in Pediatrics*  
 William Robert Felts, Jr., B.S., M.D., *Associate Professor of Medicine*  
 Gerald Mervin Fenichel, A.B., M.D., *Instructor in Neurology*  
 Leslie Howard Fenton, M.D., *Clinical Instructor in Medicine*  
 Leon Ferber, A.B., M.D., *Associate Clinical Professor of Psychiatry*  
 Edward Egner Ferguson, M.D., *Clinical Professor of Urology*  
 William Ferguson, B.S., M.D., *Assistant Clinical Professor of Surgery*  
 Richard Lee Fields, A.B., M.D., *Clinical Instructor in Otolaryngology*  
 Ben Sion Fine, M.D., *Assistant Professor of Ophthalmology*  
 Daniel Finucane, B.S., M.D., *Professorial Lecturer in Preventive Medicine and Community Health*  
 Robert Andrew Fischer, A.B., M.D., *Clinical Instructor in Medicine*  
 Gerald John Fisher, A.B., M.D., *Assistant Clinical Professor of Medicine*  
 Lester Walter Fix, A.B., M.D., *Assistant Clinical Professor of Pathology*  
 Edward Stitt Fleming, A.M., M.D., *Assistant Professor of Psychiatry*  
 Marvin Peace Footer, A.B., M.D., *Associate Clinical Professor of Obstetrics and Gynecology*  
 Charles William Foulke, A.B., M.D., *Assistant Clinical Professor of Medicine*  
 John David Foulke, A.B., M.D., *Clinical Instructor in Medicine*  
 Richard Crosman Fowler, B.S., M.D., *Associate Professor of Medicine*  
 John Leroy Fox, M.D., *Clinical Instructor in Neurological Surgery*  
 Mary Alice Vann Fox, A.B., M.D., *Clinical Instructor in Pediatrics*  
 Juan Reynaldo Fraga, M.D., *Assistant Clinical Professor of Pediatrics*  
 Randolph Adams Frank, A.B., M.D., *Assistant Clinical Professor of Psychiatry*  
 Clarence Kendall Fraser, Ph.B., M.D., *Associate Clinical Professor of Obstetrics and Gynecology*  
 Donald Sharp Fredrickson, B.S., M.D., *Special Lecturer on Internal Medicine*  
 Fritz Adolph Freyhan, M.D., *Clinical Professor of Psychiatry*  
 Adolph Friedman, A.B., M.D., *Assistant Clinical Professor of Medicine*  
 Joseph Marshall Friedman, A.B., M.D., *Associate Clinical Professor of Obstetrics and Gynecology*  
 David Frost, B.S., M.D., M.P.H., *Associate Clinical Professor of Preventive Medicine and Community Health*  
 Marvin Fuchs, B.S., M.D., *Assistant Clinical Professor of Medicine*  
 Edward Elias Gahres, M.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*  
 Wilfred Ernest Gallinek, A.B., M.D., *Clinical Instructor in Medicine*  
 Robert William Gans, A.B., M.D., *Assistant Clinical Professor of Psychiatry*

James Quincy Gant, Jr., M.S., M.D., *Clinical Professor of Dermatology*  
 Leon Gerber, M.D., *Clinical Instructor in Surgery*  
 Sam Thompson Gibson, B.S., M.D., *Assistant Clinical Professor of Medicine*  
 Eugene Solomon Gladsden, B.S., M.D., *Associate Clinical Professor of Medicine*  
 William Bainbridge Glew, M.S., M.D., *Assistant Clinical Professor of Ophthalmology*  
 Ira David Godwin, B.S., M.D., *Assistant Clinical Professor of Pathology*  
 Herbert Abraham Goldberg, M.D., *Assistant Clinical Professor of Urology*  
 Seymour Zonald Goldblatt, B.S., M.D., *Clinical Instructor in Pediatrics*  
 Herbert Stanley Golomb, A.B., M.D., *Clinical Instructor in Dermatology*  
 Ervin Alexander Gombos, A.B., M.D., *Associate Professor of Medicine*  
 Thomas Alphonse Gonder, B.S., M.D., *Assistant Clinical Professor of Medicine*  
 Bela Gondos, M.D., *Assistant Clinical Professor of Radiology*  
 Nelson Gates Goodman, A.B., M.D., *Clinical Instructor in Medicine*  
 Francis Byron Gordon, Ph.D., M.D., *Special Lecturer on Virology*  
 Samuel Chrabolowski Gordon, M.D., *Assistant Clinical Professor of Psychiatry*  
 Patrick Alan Gorman, M.B., B.Ch., B.A.O., D.C.H., *Assistant Professor of Medicine*  
 Conrad Gossels, M.D., *Assistant Clinical Professor of Medicine*  
 Ernest Alva Gould, B.S., M.D., *Associate Clinical Professor of Surgery*  
 Susannah Jane Rich Gourevitch, Ph.D., *Assistant Clinical Professor of Psychiatry (Psychology)*  
 Murray Grant, M.D., D.P.H., *Clinical Professor of Community Health*  
 Paul Holley Gray, B.S., M.D., *Associate Clinical Professor of Psychiatry*  
 Robert Milton Greenberg, A.B., M.D., *Assistant Clinical Professor of Psychiatry*  
 Angus MacIvor Griffin, Ph.D., *Professor of Microbiology; Associate Dean of the School of Medicine*  
 Robert Henry Groh, B.S., M.D., *Associate Clinical Professor of Neurology*  
 Frederick Moulton Gross, M.D., *Assistant Clinical Professor of Medicine*  
 Mabel Harlakenden Grosvenor, A.B., M.D., *Assistant Clinical Professor of Pediatrics*  
 Dezider Gruenberger, Ph.D., *Visiting Assistant Research Professor of Pharmacology*  
 Grace Hughes Guin, B.S., M.D., *Assistant Clinical Professor of Pathology*  
 Milton Gusack, A.B., M.D., *Associate Clinical Professor of Medicine*  
 Margaret Frances Gutelius, A.B., M.D., *Associate Clinical Professor of Pediatrics*  
 Harold Melton Hagen, A.B., M.D., *Instructor in Radiology*  
 John Thomas Hagenbucher, B.S., M.D., *Assistant Clinical Professor of Medicine*

William Archer Hagins, M.D., Ph.D. (Cantab.), *Assistant Professorial Lecturer in Physiology*  
 Gerald Hahn, Ph.D., *Assistant Research Professor of Pharmacology*  
 Fred Ernst Hahn, Ph.D., *Special Lecturer in Pharmacology*  
 Michael Joseph Halberstam, A.B., M.D., *Clinical Instructor in Medicine*  
 Allan Hall, A.B., M.D., *Assistant Professor of Surgery*  
 Wilson Luther Hall, A.B., M.D., *Assistant Clinical Professor of Medicine*  
 William Donald Hann, Ph.D., *Instructor (part-time) in Microbiology*  
 Louis Hansen, D.D.S., M.S., *Associate Clinical Professor of Pathology*  
 Kermit Henry Hanson, A.B., M.D., *Assistant Professor of Anesthesiology*  
 George White Hardman, Jr., A.B., M.D., *Clinical Instructor in Pediatrics*  
 Louis Elmore Harman, Jr., M.D., *Assistant Clinical Professor of Dermatology*  
 Henry Curtis Harrell, M.D., *Assistant Clinical Professor of Radiology*  
 Jerome Blaine Harrell, M.D., *Assistant Clinical Professor of Surgery; University Surgeon*  
 David Warner Harris, A.B., M.D., *Assistant Clinical Professor of Psychiatry*  
 Forest Klaire Harris II, B.S., M.D., *Assistant Clinical Professor of Medicine*  
 Isabella Harrison, A.B., M.D., *Assistant Clinical Professor of Surgery*  
 Clarence Richard Hartman, A.B., M.D., *Associate Professor of Preventive Medicine and Community Health*  
 Thomas Lees Hartman, A.M., M.D., *Assistant Clinical Professor of Medicine*  
 Quentin LeRoy Hartwig, Ph.D., *Associate Research Professor of Physiology*  
 William Herbert Harvey, B.S., M.D., *Clinical Instructor in Medicine*  
 George Joseph Hayes, B.S., M.D., *Associate Clinical Professor of Neurological Surgery*  
 Murdock Head, D.D.S., M.D., LL.B., *Assistant Clinical Professor of Surgery; Professorial Lecturer in Forensic Medicine*  
 Elson Bowman Helwig, B.S., M.D., *Clinical Professor of Pathology (Dermatology)*  
 Edward Shelton Henderson, A.B., M.D., *Instructor (part-time) in Physiology*  
 John David Herman, B.S., M.D., *Clinical Instructor in Medicine*  
 Roy Hertz, Ph.D., M.D., *Special Lecturer in Medicine (Endocrinology)*  
 Robert Sexton Higdon, B.S., M.D., *Professor of Dermatology; Director of University Clinics*  
 George Alfred Higgins, Jr., B.S., M.D., *Clinical Professor of Surgery*  
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 Elizabeth Harman Hill, M.D., *Associate Clinical Professor of Medicine*  
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Shalom Zarach Hirschman, A.B., M.D., *Clinical Instructor in Medicine*

Cornelia Hoch-Ligeti, M.D., *Assistant Clinical Professor of Pathology*

Leroy Edward Hoeck, M.D., *Clinical Professor of Pediatrics*

Ariel Cabill Hollinshead, Ph.D., *Associate Research Professor of Medicine (Pharmacology)*

Jordan Loyal Holtzman, M.D., Ph.D., *Assistant Professorial Lecturer in Physiology*

Julian Hoptman, Ph.D., *Assistant Research Professor of Microbiology*

Alec Horwitz, A.B., M.D., M.S. in Surg., *Clinical Professor of Surgery*

David Horwitz, M.D., *Assistant Clinical Professor of Medicine*

Norman Harold Horwitz, A.B., M.D., *Assistant Clinical Professor of Neurological Surgery*

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William Allen Howard, A.B., M.D., *Clinical Professor of Pediatrics*

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Rudolph Hugh, Ph.D., *Associate Professor of Microbiology*

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Vincent Michael Iovine, B.S., M.D., *Clinical Professor of Surgery*

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Leon Jacobs, Ph.D., *Special Lecturer on Medical Parasitology*

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Marshall Hannis Jacobson, A.B., M.D., *Associate Professor of Medicine*

Stanley Jacobson, Ph.D., *Assistant Professorial Lecturer in Anatomy*

Sidney Jaffee, A.B., M.D., *Clinical Instructor in Otolaryngology*

William James Jaffurs, B.S., M.D., *Assistant Clinical Professor of Pathology*

Ruth Elizabeth Kerr Jakoby, A.B., M.D., *Assistant Clinical Professor of Neurological Surgery*

Frank Skiff Jannotta, A.B., M.D., *Assistant Professor of Pathology*

William Dabney Jarman, B.S., M.D., *Associate Clinical Professor of Urology*

Frank Joseph Jarsen, A.B., M.D., *Clinical Instructor in Medicine*

Garth Louray Jarvis, A.B., M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*

Lent Clifton Johnson, B.S., M.D., *Special Lecturer in Pathology*

Thomas Nick Johnson, Ph.D., *Associate Professor of Anatomy*

Warren Charles Johnson, B.S., M.D., *Assistant Clinical Professor of Psychiatry*

Joseph Boudinot Johnston, Jr., B.S., M.D., *Assistant Clinical Professor of Radiology (Radiobiology)*

Werner Jondorf, Ph.D., *Assistant Research Professor of Pharmacology*

Charles Wilson Jones, A.B., M.D., *Associate Clinical Professor of Medicine*  
Hans Elmar Kaiser, Ph.D., *Assistant Professor of Anatomy*  
Irwin Howard Kaiser, A.B., M.D., *Associate Clinical Professor of Psychiatry*  
Paula Reines Kaiser, M.B., Ch.B., M.D., *Associate Professor of Anesthesiology*  
Sol Katz, B.S., M.D., *Special Lecturer on Pulmonary Disease*  
Morton Selwyn Kaufman, A.B., M.D., *Associate Clinical Professor of Obstetrics and Gynecology*  
Richard Miles Kaufman, A.B., M.D., *Clinical Instructor in Medicine*  
George Gordon Kay, A.B., M.D., *Clinical Instructor in Medicine*  
Charles Keck, A.B., M.D., *Assistant Clinical Professor of Orthopedic Surgery*  
Christine Waples Kehne, A.B., M.D., *Assistant Clinical Professor of Psychiatry*  
Wilmer Deaver Kehne, A.B., M.D., *Assistant Clinical Professor of Psychiatry*  
George Archibald Kelser, Jr., B.S., M.D., *Associate Professor of Medicine*  
Ludwig George Kempe, M.S., Dr.Med., *Assistant Clinical Professor of Neurological Surgery*  
Meir Kende, M.S., *Instructor (part-time) in Microbiology*  
John Kenealy, A.B., M.D., *Clinical Instructor in Urology*  
Peter Kenmore, M.D., *Assistant Professor of Orthopedic Surgery*  
Thomas James Kennedy, Jr., B.S., M.D., *Special Lecturer in Medicine*  
Milton Oliver Kepler, A.B., M.D., *Clinical Instructor in Pediatrics*  
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 Neel Jack Price, A.B., B.S., M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*  
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 David Platt Rall, M.D., Ph.D., *Associate Professorial Lecturer in Physiology*  
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 Duane Case Richtmeyer, M.D., A.B., *Clinical Instructor in Surgery*  
 Barton Winters Richwine, M.D., *Associate Clinical Professor of Obstetrics and Gynecology*  
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 Peter Tone Ridley, Ph.D., *Assistant Professor of Physiology*  
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Joseph Hicks Watson, B.S., M.D., *Assistant Clinical Professor of Medicine*

John Watt, Jr., M.D., *Associate Professor of Physical Medicine and Rehabilitation*  
 Mary Falorsi Watt, M.D., *Associate Professor of Medicine*  
 James Winston Watts, B.S., M.D., *Professor of Neurological Surgery*  
 Benny Waxman, M.D., *Assistant Professor of Obstetrics and Gynecology*  
 Blair McWhorter Webb, M.D., *Clinical Instructor in Otolaryngology*  
 Charles Richard Webb, B.S., M.D., *Assistant Clinical Professor of Pediatrics*  
 Charles Malcolm Weber, M.D., *Clinical Instructor in Radiology*  
 George Davis Weickhardt, M.D., *Assistant Clinical Professor of Neurology*  
 John Russell Weimer, B.S., M.D., *Clinical Instructor in Ophthalmology*  
 Jacob Joseph Weinstein, Phar.G., B.S., M.D., *Assistant Clinical Professor of Surgery*  
 Frank Joseph Weinstock, M.D., *Clinical Instructor in Ophthalmology*  
 Paul Stephen Weisberg, A.B., M.D., *Assistant Professor of Psychiatry*  
 William Weiss, M.D., *Assistant Professor of Pharmacology*  
 Arthur Weissbach, Ph.D., *Professorial Lecturer on Enzymes*  
 Herbert Weissbach, Ph.D., *Special Lecturer on Vitamins*  
 Don Wenger, M.D., M.S., *Associate Clinical Professor of Surgery*  
 Francis Liell Wenger, B.S., M.D., *Assistant Clinical Professor of Physical Medicine and Rehabilitation*  
 Sidney Lee Werkman, A.B., M.D., *Associate Clinical Professor of Psychiatry*  
 Helene Gilliaert Werner, A.B., M.D., *Assistant Professor of Anesthesiology*  
 Thomas Whelan, A.B., M.D., *Associate Clinical Professor of Surgery*  
 David Colwell Wherry, A.B., M.D., *Associate Clinical Professor of Surgery; Associate University Surgeon*  
 William Whitmore, Jr., M.D., *Assistant Professor of Medicine*  
 Henry Sindos Wicker, M.D., *Clinical Instructor in Ophthalmology*  
 Allen Widome, M.D., *Clinical Instructor in Anesthesiology*  
 Uthai Vincent Wilcox II, M.D., *Clinical Instructor in Radiology*  
 Richard Wallace Wilkinson, A.B., M.D., M.S., in Med., *Associate Clinical Professor of Ophthalmology*  
 Robert Shaw Wilkinson, A.B., M.D., *Clinical Instructor in Medicine*  
 Jonathan Marshall Williams, M.D., *Clinical Professor of Neurological Surgery*  
 Marjorie Joan Williams, M.D., *Assistant Clinical Professor of Pathology*  
 Thomas Ashton Wilson, A.B., M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*  
 Alan William Winshel, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*  
 Theodore Winship, A.B., M.D., *Associate Clinical Professor of Pathology*  
 Karl Wipplinger, M.D., *Instructor in Medicine*  
 Charles Samuel Wise, B.S., M.D., *Professor of Physical Medicine and Rehabilitation*  
 Frederick William Wolff, M.S., M.D., *Professor of Medicine*  
 Herbert DeGrange Wolff, Jr., M.D., *Clinical Instructor in Urology*  
 Charles Harold Wollack, Ph.D., *Instructor (part-time) in Physiology*  
 Wai Tuen Wong, M.D., *Instructor in Anesthesiology*  
 Michael Aime Woodbury, Ph.B., A.B., M.D., *Assistant Clinical Professor of Psychiatry*



Thomas Mahlon Wright, A.B., M.D., *Clinical Instructor in Surgery*  
 Alvin Charles Wyman, A.B., M.D., *Assistant Clinical Professor of Radiology*  
 Jean Haroutian Yacoubian, A.B., M.D., *Assistant Clinical Professor of Psychiatry*  
 Harold Taylor Yates, M.D., *Clinical Instructor in Pediatrics*  
 Leon Yochelson, A.B., M.D., *Professor of Psychiatry*  
 Samuel Yochelson, Ph.D., M.D., *Research Professor of Psychiatry*  
 Stanley Yolles, A.M., M.D., M.P.H., *Associate Clinical Professor of Psychiatry*  
 William Hurlburt Young, Jr., B.S., M.D., *Assistant Clinical Professor of Psychiatry*  
 Elmar Heinz Zeitler, Ph.D., *Assistant Clinical Professor of Pathology*  
 Edward Zimmerman, B.S., M.D., *Associate Clinical Professor of Obstetrics and Gynecology*  
 Lorenz Eugene Zimmerman, A.B., M.D., *Clinical Professor of Ophthalmic Pathology*  
 David Zohn, A.B., M.D., *Clinical Instructor in Physical Medicine and Rehabilitation*  
 William John Zukel, B.S., M.D., D.P.H., *Associate Clinical Professor of Preventive Medicine and Community Health*

## Assistants 1965-66

### ASSISTANTS IN RESEARCH AND INSTRUCTION

Oscar Ramiro Aizcorbe, M.D., *Fellow in Physical Medicine and Rehabilitation*  
 Manuel Alafriz, M.D., *Assistant in Anesthesiology*  
 Jawad Anabtawi, M.B.B.Ch., *Assistant in Medicine*  
 Danny Fussell Anderson, M.D., *Assistant in Medicine*  
 Lorgio Francisco Arteaga, M.D., *Assistant in Anesthesiology*  
 Purita Enriquez Balingit, M.D., *Assistant in Anesthesiology*  
 Sreela Ghosh Banerjee, M.D., *Assistant in Anesthesiology*  
 Vida Helsm Beaven, A.M., *N.I.H. Predoctorate Fellow in Biochemistry*  
 Walter Brady Bishop, Jr., M.D., *Assistant in Obstetrics and Gynecology*  
 Chana Buakham, M.D., *Assistant in Anesthesiology*  
 Robert Carducci, A.B., M.D., *Assistant in Medicine*  
 Joseph Franklin Chambers, B.S., M.D., *Assistant in Psychiatry*  
 Jose German Chaname, D.D.S., *Assistant in Anesthesiology*  
 Blanca Annas Cinco, M.D., *Assistant in Anesthesiology*  
 Thomas John Craig, A.B., M.D., *Assistant in Dermatology*  
 Alexandre Couceiro Da Costa, M.D., *Assistant in Anesthesiology*  
 Francis Gene Dahlke, M.D., *Assistant in Surgery*  
 Eric David, M.D., *Assistant in Surgery*  
 Esteban Diaz-Granados, M.D., *Assistant in Surgery*  
 Giovanni DiSandro, M.D., *Assistant in Surgery*  
 Gloria Donna Eng, M.D., *Fellow in Physical Medicine and Rehabilitation*

Leonard Calvert Eppard, M.D., *Assistant in Obstetrics and Gynecology*  
 Samuel Ignacio Fandino, M.D., *Assistant in Neurological Surgery*  
 Richard Stanley Finn, M.D., *Assistant in Surgery*  
 Eleanor Flores, M.D., *Assistant in Medicine*  
 Enrique Garcia, M.D., *Assistant in Obstetrics and Gynecology*  
 Susan Gartner, M.S., *Fellow in Biochemistry*  
 Natalie Greenough Gavian, A.B., *Fellow (Trainee) in Physiology*  
 Elvin Thomas Gibson, A.B., M.D., *Assistant in Obstetrics and Gynecology*  
 Warren Herbert Gilbert, M.D., *Assistant in Surgery*  
 Andrew Michael Goldner, A.M., *Fellow in Physiology*  
 Jose Gomez, M.D., *Assistant in Anesthesiology*  
 Thomas Hamlin Gresinger, A.B., M.D., *Assistant in Obstetrics and Gynecology*  
 Diller Baer Groff III, A.B., M.D., *Assistant in Surgery*  
 Lauro Halstead, A.B., M.D., *Assistant in Medicine*  
 Ivie Peyton Haralson, Jr., M.D., *Assistant in Surgery*  
 Carolyn Myrick Hardin, *Fellow in Physiology*  
 Lewis J. Hellerstein, M.D., *Assistant in Medicine*  
 Mannah Hemadeh, M.D., *Assistant in Surgery*  
 Pearl Holly, M.D., *Assistant in Psychiatry*  
 James Thomas Horne, M.D., *Assistant in Surgery (Plastic)*  
 Homer Charles House, M.D., *Assistant in Surgery*  
 Hannibal Eldredge Howell, M.D., *Assistant in Medicine*  
 Kyoko Ikari, B.S., R.P.T., *Assistant in Physical Medicine and Rehabilitation*  
 George Joseph, M.D., *Assistant in Psychiatry*  
 Frank Edward Kachinski, Jr., B.S., M.D., *Assistant in Obstetrics and Gynecology*  
 Nguyen Ba Khoi, M.D., *Assistant in Medicine*  
 Panpit Pansuawana Klug, M.D., *Assistant in Medicine*  
 William Marvin Kniep, M.D., *Assistant in Psychiatry*  
 Stephen Jay Kurabard, M.D., *Assistant in Radiology*  
 Edward Roberts Lang, M.D., *Assistant in Neurological Surgery*  
 Peter Clark LaRowe, M.D., *Assistant in Surgery*  
 Kenneth Spero Latchis, M.D., *Assistant in Surgery*  
 Harold Leader, M.D., *Assistant in Medicine*  
 Seth Howard Lourie, A.B., M.D., *Assistant in Medicine*  
 Nicholas Maganias, M.D., *Fellow in Medicine*  
 Harold Maizel, A.B., M.D., *Assistant in Medicine*  
 Johnnie Lee Manning, B.S., M.T., *Fellow in Microbiology*  
 Franz Edward Marschall, B.S., M.D., *Assistant in Surgery*  
 Jerome Stephen Mayersak, M.D., *Assistant in Surgery*  
 Samuel Frank Mazella, A.B., M.D., *Assistant in Surgery*  
 John Frederick Mermel, B.S., M.D., *Assistant in Medicine*  
 Keith West Merrill, M.D., *Assistant in Obstetrics and Gynecology*  
 Meredith Hodes Miller, M.D., *Fellow in Neuropathology*  
 Valery Thornton Miller, M.D., *Assistant in Medicine*  
 Paul Gregory Modie, Jr., M.D., *Assistant in Surgery*  
 Austin Moede, A.B., M.D., *Assistant in Medicine*  
 Braulio Alberto Morales, M.D., *Assistant in Obstetrics and Gynecology*  
 David Lawrence Morris, M.D., *Assistant in Ophthalmology*  
 Gurbux Hariram Nachnani, M.D., *Assistant in Medicine*  
 Jules Neviaser, B.S., M.D., *Assistant in Surgery*  
 Cap Hill Oliver, Jr., A.B., M.D., *Assistant in Medicine*

Melike Fatma Oner, M.D., *Fellow in Anesthesiology*  
 Pedro Mario Pabon, A.B., M.D., *Fellow in Anesthesiology*  
 Ira Weiss Pearlman, A.B., M.D., *Assistant in Psychiatry*  
 Peter Pentchev, B.S., *Sanders Fellow in Biochemistry*  
 Baltazar Espino Perez, M.D., *Fellow in Neuropathology*  
 Paul Hening Perkins, A.B., M.D., *Assistant in Obstetrics and Gynecology*  
 Rodney Victor Pozderac, A.B., M.D., *Assistant in Medicine*  
 Robert William Rabbitt, A.B., M.D., *Assistant in Obstetrics and Gynecology*  
 Fernando Ramirez-Tio, M.D., *Assistant in Medicine*  
 Robert Michael Regan, M.D., *Assistant in Obstetrics and Gynecology*  
 Lydia Coronado Rigor, M.D., *Assistant in Anesthesiology*  
 Enrique Augusto Bonfils Roberts, M.D., *Assistant in Surgery*  
 Leslie Ira Rose, A.B., M.D., *Assistant in Medicine*  
 Allan Michael Ross, A.B., M.D., *Assistant in Medicine*  
 Catherine Margaret Ryan, B.S., *Assistant in Physical Medicine and Rehabilitation*  
 Mary Kay Salto, M.D., *Assistant in Surgery*  
 Rajindra Kumar Sarin, M.B.B.S., *Assistant in Medicine*  
 Pierre Jean Severyns, M.D., *Fellow in Pediatrics*  
 Sabibe Sharif, M.D., *Assistant in Pathology*  
 Joan Adele Turkus Sheets, B.S., M.D., *Assistant in Pathology*  
 Michael Mendel Shefferman, M.D., *Assistant in Medicine*  
 Pearl Yui-Tai Shen, A.B., M.D., *Assistant in Psychiatry*  
 Karl Lawrence Singer, M.D., *Assistant in Surgery*  
 Paul Snow, B.S., M.D., *Assistant in Pathology*  
 Robert Sobel, A.B., *Sanders Fellow in Biochemistry*  
 George Andrew Solack, M.D., *Assistant in Radiology*  
 Adam Sommerstein, M.D., *Assistant in Radiology*  
 Israel Spector, B.S., M.D., *Fellow in Medicine (Hematology)*  
 Mandell Don Stearman, A.B., M.D., *Assistant in Medicine*  
 Howard Nau Stewart, B.S., M.D., *Assistant in Surgery*  
 Linda Christine Sun, *Fellow in Physiology*  
 George Szele, M.D., *Assistant in Anesthesiology*  
 Abigail Gertrude Thornton, B.S., *Sanders Fellow in Biochemistry*  
 Mario Vahos, B.S., M.D., *Assistant in Surgery (Plastic)*  
 Borislav Vlalukin, M.D., *Assistant in Medicine*  
 Lillian Vlalukin, M.D., *Fellow in Medicine (Infectious Disease)*  
 James Wells Voell, M.D., *Assistant in Psychiatry*  
 Herrick Warren, B.Mech.Eng., M.D., *Assistant in Surgery*  
 Carol Faye Whitfield, M.S., *Fellow in Physiology*  
 Mark Frederick Wildemann, B.S., M.D., *Assistant in Medicine*

#### TECHNICAL ASSISTANTS

Mohamed Mohamed Bakry, *Laboratory Supervisor in Physiology*  
 Fred Buttner, *Technician, Physiology*  
 Barbara Anne Cregan, A.B., *Technician, Medicine*  
 John Franklin, *Technician, Biochemistry*  
 Fredric Karl Hissong, *Photographer, Medical School*  
 Obong Lee, *Technician, Microbiology*  
 Carol Ruth Michaelis, *Research Technician*  
 Michael Stuart Murtaugh, *Medical Illustrator*  
 Hayden Earl Newcity, *Chief Medical Photographer*



Jno Deshon Randall, *Technician, Neurology and Neurological Surgery*  
 Henry Lorenzo Saunders, B.S., *Technical Assistant, Microbiology*  
 William James Scott, Jr., D.V.M., *Consultant Veterinarian*  
 James Grady Smith, *Technician, Microbiology*  
 John Barclay Smith, Jr., *Museum Curator in Anatomy*  
 Norman Welch Toupfer, *Technical Assistant*  
 Caroline Amelia Silence Woodruff, M.S., *Technician, Anatomy*  
 Willie Thomas Wynn, *Technician, Pharmacology*

#### ADMINISTRATIVE ASSISTANTS

Norma P. Baker, A.B. *Departmental Secretary, Medicine*  
 Linda May Belt, *Processing Clerk, Medical Admissions*  
 Ausra M. Blekaitis, *Departmental Secretary, Dermatology*  
 Catherine Breen, *Assistant to the Dean*  
 Elizabeth Anne Buser, A.B., *Assistant to the Associate Dean*  
 Louree Crossfield, A.B., *Assistant to the Associate Dean*  
 Daphne Isabel Dutton, A.B., *Secretary, Office of the Dean*  
 Meta Allen Eberdt, A.B., *Secretary, Obstetrics and Gynecology*  
 Mabel Frances Edmonston, *Departmental Secretary, Ophthalmology*  
 Ann Ashton Elgin, *Secretary, Preventive Medicine and Community Health*  
 Margaret N. Giberson, *Secretary, Postgraduate Medical Education*  
 Florence Myer Graham, B.S., *Evaluator, Medical Admissions*  
 Vivian Jones, *Secretary, Office of the Dean*  
 Ruth Karstens, *Departmental Secretary, Pathology*  
 Selma Klein, *Departmental Secretary, Physiology*  
 Maribelle Johnson Kohn, *Secretary, Office of the Dean*  
 Pao Ming Li, *Clerk-Typist, Medical Admissions Office*  
 Tessa Gavine Mason, A.M., *Secretary, Office of the Dean*  
 Betty Miller McKee, *Secretary, Alumni Office*  
 Betty-Lou Melitzer, *Departmental Secretary, Psychiatry*  
 Florence P. Naylor, *Departmental Secretary, Physiology*  
 Elfriede E. Piermarini, *Departmental Secretary, Pharmacology*  
 Margaret Magee Pogue, B.S., *Departmental Secretary, Biochemistry*  
 Margaret Riddle, *Departmental Secretary, Surgery*  
 Virginia Sutton Ringness, *Departmental Secretary, Obstetrics and Gynecology*  
 Carmel Latell Romeo, *Departmental Secretary, Pharmacology*  
 Lillian Selles, A.B., *Departmental Secretary, Microbiology*  
 Melvin Bryant Shiver, *Assistant, Preventive Medicine*  
 Cynthia Gail Steinbach, *Secretary, Office of the Dean*  
 Jean Stewart, *Departmental Secretary, Anatomy*  
 Martha Anne Viss, *Departmental Secretary, Pediatrics*

#### LIBRARY

Isabella Frances Young, A.B. in L.S., *Librarian, Medical Library*  
 Susan Soon Hi Myong, A.B., M.S. in L.S., *Assistant, Medical Library*  
 Janet Isgreen, *Assistant, Medical Library*  
 Roberta Koch, *Assistant, Hospital Branch*  
 Sally Waltz, *Assistant, Hospital Branch*

# THE SCHOOL OF MEDICINE RECORD 1964-65

## Degrees Conferred

### DOCTOR OF MEDICINE

JUNE 7, 1964

Danny Fussell Anderson	Ga.	Theodore Richard Gelet	Pa.
B.S. 1960, Furman University		B.S. 1959, Pennsylvania State University	
Harold Fishburn Anderson	Calif.	Seymour Gendelman	Pa.
A.B. 1960, Los Angeles State College of Applied Arts and Sciences		(With distinction)	
Todd Edmund Anderson	D.C.	B.S. in Phar. 1953, Temple University	N.Y.
A.B. 1960, DePauw University		William Francis Hallahan	
William Stafford Anderson	Pa.	B.S. 1960, Mount St. Mary's College	Md.
B.S. in C.E. 1956, Duke University		Kenneth Royce Hansen	
Lester Beachy	Va.	B.S. 1959, Utah State University of Agriculture and Applied Science	N.Y.
Burton Lee Belsky	Pa.	Carl Alf Hanssen	N.Y.
A.B. 1960, University of Pennsylvania		A.B. 1952, Princeton University	Wis.
Rolf Hartwig Bessin	D.C.	William Max Hinz	
A.B. 1960, Johns Hopkins University		B.S. 1961, University of Wisconsin	Wash.
Samuel Randall Blakesley	Ariz.	John Lee Holmes	D.C.
B.S. 1959, University of Arizona		Homer Charles House	D.C.
Edward Louis Boas	Idaho	B.S. 1959, Washington and Lee University	D.C.
B.S. 1960, University of Idaho		Allan Armstrong Hunter, Jr.	
John Francis Brady	R.I.	A.B. 1960, The George Washington University	D.C.
A.B. 1960, Providence College		Ronald Orne Hurston	D.C.
John Holt Brazinsky	Va.	A.B. 1960, Yale University	Md.
B.S. 1960, University of Notre Dame		John Richard Hushaw	
Edward William Brink	Conn.	A.B. 1960, Occidental College	D.C.
A.B. 1960, Trinity College		Samuel Burt Itscoitz	Utah
John Goodwin Buchanan	D.C.	Cecil Bryant Jacobson	D.C.
A.B. 1960, Amherst College		B.S. 1960, University of Utah	
David Clark Burdge	Va.	Martin Bernard Kass	D.C.
B.S. 1958, M.S. 1961, The George Washington University		A.B. 1961, The George Washington University	Calif.
Dwight Lloyd Carlson	Calif.	Roy Denvall Kent	Calif.
Richard Silvan Carvalho	R.I.	A.B. 1958, San Jose State College	Idaho
B.S. 1958, University of Rhode Island		Clifford Jay Kindred	Fla.
Philip Kin-Wo Chan	Calif.	A.B. 1955, Brigham Young University	D.C.
John Richard Cope	Pa.	William Marvin Kniep	
B.S. in Phar. 1960, University of Pittsburgh		A.B. 1955, University of Florida	
Aaron DePue Cottle	W.Va.	Joel Lester Koslow	
Jonathan Hill Daines	Utah	(With distinction)	
Charles David Ebert	D.C.	A.B. 1960, Harvard University	Pa.
A.B. 1960, West Virginia University		Stanley Frank Kulaga, Jr.	N.Y.
Charles Bryner Edwards	Utah	B.S. in Phar. 1960, Temple University	D.C.
B.S. 1960, Brigham Young University		John Bosco Lima	
Stanley Lee Falor	Ohio	A.B. 1960, New York University	
B.S. 1958, Ohio State University		Lawrence Tolstoi Lobl	
William Carr Flanagan, Jr.	Va.	A.B. 1960, The George Washington University	Ohio
A.B. 1960, University of Virginia		George William Lose	Calif.
William George Frank	Va.	Jerry Manning Lyle	Utah
B.M.E. 1949, University of Louisville		George Franklin Madsen II	
B.D. 1952, Virginia Theological Seminary	Md.	B.S. 1962, Brigham Young University	N.Y.
Robert Huth Gaither	Calif.	Stanley Dimitriou Maoury	
A.B. 1960, Johns Hopkins University		B.S. 1954, O.D. 1955, Chicago College of Optometry	
Harvey Rex Gardner			
A.B. 1958, University of California at Berkeley			

Jerome Stephen Mayersak	Wis.	Karl Lawrence Singer	Va.
A.B. 1960, Johns Hopkins University		B.S. 1959, Washington State University	
Milton Jerome Milne	Calif.	Mandell Don Stearman	D.C.
B.S. 1957, University of California		A.B. 1961, The George Washington University	
Braulio Alberto Morales	Costa Rica	George Edward Streubert	N.J.
A.B. 1960, Lafayette College		B.S. 1960, Moravian College	
David Lawrence Morris	Calif.	Herbert Irving Suesserman	N.Y.
A.B. 1958, University of California at Berkeley		B.S. in Phar. 1960, Long Island University	
Norman Curtis Myers	N.J.	Richard Willie Takaki	Calif.
A.B. 1960, Washington and Jefferson College		A.B. 1960, Stanford University	
Jules Salem Neviaser	Va.	Albert Paul Tarasuk	N.Y.
B.S. 1959, Morris Harvey College		(With distinction)	
Peter Jackson Newell	N.M.	A.B. 1960, The George Washington University	
A.B. 1960, Occidental College		Richard Arthur Triggs	Va.
Richard Austin Nicklas	D.C.	B.S. 1959, Long Beach City College	
A.B. 1958, Cornell University		Roger Lindelle Tyson	Idaho
Peter Nintcheff	Ohio	B.S. 1959, University of Idaho	
A.B. 1960, Western Reserve University		Egils Veverbrants	N.H.
Frederick Cleveland Norcross	Md.	B.S. 1957, University of New Hampshire	
A.B. 1960, University of Pennsylvania		Leonard Wartofsky	D.C.
Robert Dennis Patterson	D.C.	(With distinction)	
A.B. 1960, University of Missouri		B.S. 1959, M.S. 1960, The George Washington University	
James Perrin Perry	D.C.	Thomas Moore Webster	Va.
A.B. 1960, Middlebury College		A.B. 1960, University of Virginia	
Ruthann Pick	Ill.	Gary Banks White	Utah
A.B. 1959, Boston University		A.B. 1960, Brigham Young University	
Rodney Victor Pozderac	W.Va.	Gilbert Lawrence White	Calif.
A.B. 1958, West Virginia University		A.B. 1958, Stanford University	
Robert Michael Regan	D.C.	Charles Robert Wierer	D.C.
A.B. 1957, Hamilton College		B.S. 1960, American University	
Russell Read Rice	N.J.	Walter Stanley Yourchek, Jr.	Va.
A.B. 1960, University of Virginia		A.B. 1960, Stanford University	
Leslie Ira Rose	D.C.	Robert Joseph Zappia	N.Y.
A.B. 1960, The George Washington University		A.B. 1956, University of Rochester	
Mary Kay Salto	D.C.	Jack Evans Zimmerman	Pa.
A.B. 1960, The George Washington University		B.S. 1960, University of Maryland	
Luis Antonio Sanchez-Raffucci	Puerto Rico		
B.S. 1960, Georgetown University			

## JUNE 6, 1965

Antho Edward Anderson III	Utah	Sheridan Lynn Daines	Utah
Grant Pierce Bagley	Utah	B.S. 1964, University of Utah	
B.S. 1961, University of Utah		Charles Young Davis	Va.
Nicholas Anthony Balsano	N.Y.	A.B. 1961, Johns Hopkins University	
B.S. 1960, Iona College		Michael Terrance Donahoe	Pa.
Anthony David Blau	D.C.	Gerald Lynn Ellison	Va.
A.B. 1962, The George Washington University		B.S. 1960, American University	
John William Brady, Jr.	Md.	Donald Francis Farrell	Calif.
B.S. 1961, Marietta College		(With distinction)	
John Wayne Branch	Md.	William Jonas Fidler, Jr.	Va.
B.S. 1961, University of Maryland		A.B. 1961, Washington and Lee University	
Robert Wayland Bright	D.C.	Robert George Filpi	Calif.
A.B. 1961, Ohio Wesleyan University		B.S. 1961, University of the Pacific	
Francis Christian Burton, Jr.	Va.	John Louis Ford	Md.
B.S. 1959, University of Utah		B.S. 1961, University of Maryland	
Robert Eugene Byler	Va.	Ulla M-son Fortune	Calif.
A.B. 1962, Gettysburg College		William Patrick Fortune	Calif.
Edward Bernard Byrd	D.C.	B.S. 1953, Springfield College	
A.B. 1963, The George Washington University		Alan Edward Freeland	Ohio
Richard Wright Carlisle	D.C.	A.B. 1961, Johns Hopkins University	
Ronald Mason Cilley	Maine	Roger Jay Gemmen	Mich.
A.B. 1961, University of Maine		A.B. 1957, University of Michigan	
Peter Dirk Tom Clarisse	N.Y.	Thomas Hampton Goodridge	Md.
A.B. 1961, Harpur College		A.B. 1961, Dartmouth College	
John David Clough	Md.	Richard Kuntz Goodstein	N.J.
(With distinction)		B.S. 1961, Michigan State University	
B.S. 1961, The George Washington University		of Agriculture and Applied Science	
Garret Harding Conner	Md.	Barry Kenneth Gould	Md.
A.B. 1959, Waynesburg College		A.B. 1962, The George Washington University	
		Marlene Elisabeth Haffner	Md.



William Henry Joseph Haffner (With distinction) A.B. 1961, Wesleyan University	N.J.	Roy Sheffer Musick, Jr. B.S. 1961, American University	D.C.
Ken Milton Hardy	Utah	Maureen Kathleen Nixon A.B. 1961, Catholic University of America	N.Y.
Warren Carl Hazleton, Sr.	Maine	Robert Paul Odenwald, Jr. B.S. 1961, College of the Holy Cross	D.C.
John Rudolph Herr, Jr. B.S. 1961, Juniata College	Pa.	Thomas Michael O'Neill A.B. 1961, Catholic University of America	D.C.
Paul Quay Herwick B.S. 1960, University of Pittsburgh	Pa.	David Walter Oxley A.B. 1961, Drake University	Va.
Raymond George Herzinger B.S. 1961, Brigham Young University	Idaho	Richard Dominick Paolillo B.S. 1961, College of William and Mary	Md.
John Allen Hicks A.B. 1960, Occidental College	Calif.	Elaine Elyshia Pass B.S. 1960, Tufts University	Conn.
Stanley Marvin Hirschberg A.B. 1961, Rutgers, The State University	N.J.	Lawrence Politz Marilyn Lewis Renfield (With distinction) A.B. 1961, Duke University	D.C. Va.
Robert Dale Hodgell A.B., B.S. in Med. Tech. 1959, University of Colorado	Va.	Jerry Bain Rogers B.S. 1960, University of Maryland	Mo.
Cecil Rodwell Jonas B.S. 1960, Howard University	British Guiana	Peter John Runge B.S. 1961, Villanova University	N.Y.
Thomas Llewellyn Jones, Jr.	Va.	Delbert Lyle Secrist, Jr. A.B. 1961, Stanford University	Ariz.
Sheldon Jay Kaplan A.B. 1962, Colgate University	N.Y.	John Christopher Campbell Seymour A.B. 1961, Brown University	Md.
Stuart Lee Kaplan A.B. 1961, The George Washington University	D.C.	Harold Hastings Shively, Jr. A.B. 1959, Wesleyan University	Conn.
Andrew Hok-Ching Koo A.B. 1962, The George Washington University	China	Roger Ward Steinbrenner A.B. 1962, University of California	Calif.
Norman Stuart Koval B.S. 1961, The George Washington University	Md.	Michael B. Stererman A.B. 1961, University of Rochester	N.Y.
Carmen Mercedes Lopez-Molina B.S. 1962, University of Puerto Rico	Puerto Rico	Andrew Julius Stüber A.B. 1961, University of Michigan	N.J.
Mary Magdalene Lorentz A.B. 1961, Trinity College	Md.	Donald Frank Stonefeld B.S. 1961, Ohio State University	Md.
William Charles Mast B.S. 1961, University of Arizona	Ariz.	Carl Stones George Weldon Strother B.S. 1960, University of Pittsburgh	Idaho Pa.
Anthony James Mathios Marvin Israel Maiz (With distinction) B.S. 1957, City College, New York D.D.S. 1961, New York University	Calif. N.Y.	Paul Conrad Taylor A.B. 1961, Miami University	Ohio
Daniel Sylvester Mazzuchi B.S. 1961, College of the Holy Cross	Md.	Charles John Tegtmeier A.B. 1961, Colgate University	D.C.
Bud Holland McDougal B.S. 1961, University of Idaho	Idaho	Arthur Richard Ugel B.S. 1961, The George Washington University	D.C.
Robert Dean McElhaney A.B. 1961, Central Washington State College	Wyo.	Walter Victor Rudolph Vieweg B.S. 1957, U.S. Naval Academy	Va.
David William McPhetres A.B. 1961, Whittier College	D.C.	Ruth Pomerantz Waldbaum A.B. 1961, Brooklyn College	N.Y.
James Hartley Mering III David Kent Millward B.S. 1961, Tufts University	Pa. N.Y.	Harry Maurice Walen B.S. 1961, University of Maryland	Md.
John Hill Mitchell A.B. 1961, Ohio Wesleyan University	Md.	William Budd Warden A.B. 1962, The George Washington University	Md.
Robert Lionel Moeisinger B.S. 1962, University of Utah	Va.	Allen Collier White A.B. 1961, Occidental College	Calif.
Gerald Gambs Morris A.B. 1962, The George Washington University	Va.	Robert Rudolf Wolf A.B. 1961, Rutgers, The State University	N.J.

## Students Registered 1964-65

### FIRST YEAR

Alexander, Samuel A. B.S. 1962, Tufts University	Md.	Anish, Stephen A. A.B. 1964, Rutgers, the State University	N.J.
Anderson, Rodney U., Jr. B.S. 1964, University of Utah	Utah	Antus, John L. B.S. 1964, University of Notre Dame	N.Y.

Barquist, Walter E. B.S. 1964, The George Washington University	Iowa	Irani, Sands K. A.B. 1963, University of the South	Md.
Beattie, Martin C. B.S. 1964, Washington State University	Wash.	Jansen, John V. A.B. 1964, University of California	Calif.
Bernstein, Donald P. Attended Franklin and Marshall College	N.J.	Jungblut, Kenneth R. A.B. 1963, Rutgers, the State University	N.J.
Berrie, Warren R. A.B. 1964, Stanford University	Calif.	Kennelly, Joseph P. B.S. 1964, Brigham Young University	Wyo.
Bier, Charles J. Attended The George Washington University	D.C.	Kenny, John D. B.S. 1964, University of Virginia	Va.
Bleifeld, Charles J. A.B. 1964, Lafayette College	N.Y.	King, Byron F., Jr. A.B. 1964, West Virginia University	Pa.
Brown, DeWitt C. A.B. 1964, Johns Hopkins University	N.Y.	Kohl, Roy D., Jr. A.B. 1964, Occidental College	Calif.
Buckalew, Roland E. Attended University of Utah	Utah	Kuhn, Charles M. Attended University of Pittsburgh	Pa.
Caggiano, Gian Battista A. A.B. 1964, Catholic University of America	D.C.	Kulund, Daniel N. A.B. 1962, Hofstra University	N.Y.
Carroll, Denis M. A.B. 1964, Stanford University	Calif.	Lawsky, Alan R. B.S. 1964, City University of New York	N.Y.
Cerciello, Robert L. B.S. 1964, St. Peter's College	N.J.	LeNard, Peter D. B.S. 1964, The George Washington University	D.C.
Chew, John Y. A.B. 1964, University of California	Calif.	Levenbrown, Jack A.B. 1964, Yeshiva University	N.Y.
Church, Arthur A. A.B. 1964, Boston University	Mass.	Levin, Gary M. A.B. 1964, University of Connecticut	Conn.
Cifelli, Nicholas M., Jr. A.B. 1964, Rutgers, the State University	N.J.	Levine, Robert T. Attended The George Washington University	N.J.
Clum, Katharine M. B.S. 1964, The George Washington University	Md.	Lohaus, Allan W. Attended Earlham College	N.J.
Cole, Richard I. A.B. 1963, University of Southern California	Calif.	Lourie, Ira S. A.B. 1964, The George Washington University	Md.
Collins, Richard F., Jr. A.B. 1964, Duke University	Pa.	Loxley, Sidney S. Attended The George Washington University	Ohio
Dayton, Lynn T. Attended Brigham Young University	Wyo.	Lumb, Raymond C. B.S. 1964, University of Maryland	Md.
DeWitt, Paul L. Attended Eastern Montana College of Education	Mont.	MacDonald, Gordon R. Attended Franklin and Marshall College	Md.
Dickler, Howard B. A.B. 1964, Johns Hopkins University	Ill.	Marcus, Daniel A.B. 1964, Washington University	N.Y.
Dunston, John H. A.B. 1963, Lycoming College	Pa.	Matsutani, Osamu H. A.B. 1963, University of California	Calif.
Egan, Michael C. B.S. 1964, University of Scranton	Pa.	Meichionda, Anthony M. B.S. 1964, King's College	Conn.
Ehlers, Edward M. A.B. 1964, University of Connecticut	Conn.	Meyers, Barbara M. A.B. 1961, Bryn Mawr College	D.C.
Feldman, Mark A. B.S. 1964, City University of New York	N.Y.	Miller, Bruce A. A.B. 1964, Lafayette College	N.Y.
Feldman, Marvin J. Attended The George Washington University	D.C.	Miller, Michael H. B.S. 1964, Bates College	N.Y.
Fisher, Kenneth A. B.S. 1962, Tufts University	Mass.	Murdock, Myron I. A.B. 1964, Boston University	N.J.
Fitzgerald, Joseph B. B.S. 1964, University of Scranton	Pa.	Nelsen, Margaret A. Attended The George Washington University	Md.
Fontaine, Leah L. A.B. 1964, Valparaiso University	Texas	Nicolette, Anthony J., Jr. A.B. 1963, Washington and Jefferson College	Pa.
Francis, Jack D. Attended The George Washington University	Md.	Notes, Richard D. A.B. 1964, University of Pennsylvania	D.C.
Frye, Stephen H. A.B. 1963, Boston University	Mass.	Ober, Richard R. A.B. 1963, Occidental College	Calif.
Gavaris, Paul T. B.S. in Phar. 1961, Rutgers, the State University	N.J.	Oller, Dale W. A.B. 1964, Franklin and Marshall College	Pa.
Godwin, Earl R. A.B. 1964, University of California	Calif.	Olmstead, Phillip M. A.B. 1964, Western Reserve University	Ohio
Goldberg, Gerald S. B.S. 1964, University of Pittsburgh	Pa.	Pacella, Karen J. A.B. 1964, Manhattanville College of the Sacred Heart	N.Y.
Gorbaty, Lionel L. A.B. 1964, Brooklyn College	N.Y.	Park, John R. B.S. 1964, Marquette University	Wis.
Hart, Philip L. Attended University of Pittsburgh	Pa.	Parsons, Gibbe H. A.B. 1964, Stanford University	Calif.
Hurd, Paul C. B.S. 1962, Whitworth College	Wash.	Peiken, Alan S. B.S. 1964, University of Chicago	Fla.

Reeves, John R. Attended The George Washington University	D.C.	Spencer, Edward C. Attended University of Utah	Utah
Roberts, Morton J. A.B. 1964, Franklin and Marshall College	Pa.	Stoneburner, Larry L. A.B. 1962, Ohio State University	Ohio
Rothschild, Carl J. Attended The George Washington University	Md.	Taylor, Edward J. B.S. in Phar. 1963, University of Connecticut	Conn.
Rowsey, John J. Attended The George Washington University	Va.	Tuegel, Charles R. Attended The George Washington University	Kans.
Rubin, Lewis B.S. 1964, City University of New York	N.Y.	Turetsky, Martin J. A.B. 1964, Cornell University	N.Y.
Russolillo, Gary E. A.B. 1964, University of Pennsylvania	Mass.	Vanderford, John W. B.S. 1955, Utah State University of Agriculture and Applied Science	Idaho
Sample, George A. A.B. 1964, West Virginia University	W.Va.	Van Nieuwenhuize, Albert H. A.B. 1964, Brown University	R.I.
Schneiderman, Charles I. A.B. 1964, University of Michigan	N.J.	Victor, David Ira A.B. 1964, Columbia University	Mass.
Sealy, Joan R. A.B. 1964, University of Chicago	Pa.	Walden, David A. B.S. 1964, University of Utah	Calif.
Secrist, Lee J. A.B. 1964, Stanford University	Ariz.	Watters, Edmond C. B.S. 1964, College of William and Mary	Pa.
Simington, Arthur W. A.B. 1964, Dartmouth College	Pa.	Williams, David B. Attended University of Massachusetts	Mass.
Sloan, Earle R. A.B. 1964, Stanford University	Calif.	Williams, William K. A.B. 1964, Asbury College	D.C.
Smith, James W. B.S. 1964, College of Idaho	Idaho	Young, Stephen B. A.B. 1964, Columbia University	N.Y.
Sober, Arthur J. Attended The George Washington University	D.C.	Zeaske, Richard L. A.B. 1963, Johns Hopkins University	Iowa
Spano, Kenneth A. B.S. 1964, St. Johns University	N.Y.	Zeterberg, Joseph M. B.S. 1964, Mount St. Mary's College	N.Y.
Spar, Ira L. A.B. 1964, City University of New York	N.Y.	Ziegler, James H. A.B. 1963, John Hopkins University	N.J.

## SECOND YEAR

Albertson, Kenneth W. Attended University of Idaho	Idaho	Cormack, Alvin P. B.S. 1963, Montana State College	Mont.
Azlant, Barbara J. B.S. 1962, Fresno State College	Calif.	Daughters, Dennis B. Attended University of Utah	Utah
Barnett, Thomas E. A.B. 1963, University of the Pacific	Calif.	D'Onofrio, Gregory R. B.S. 1963, College of the Holy Cross	N.Y.
Bass, Richard J. A.B. 1963, Lafayette College	N.J.	Drohan, Paul S. A.B. 1963, Washington and Jefferson College	N.Y.
Battle, William S., Jr. B.S. 1960, College of Charleston	S.C.	Drummond, Richard R. A.B. 1964, The George Washington University	D.C.
Bensinger, Thomas A. B.S. 1963, Georgetown University	D.C.	Erickson, Robert L. A.B. 1958, DePauw University	Ill.
Berman, Michael L. B.S. 1963, University of Maryland	Md.	Ewing, Russell C. II B.S. 1963, University of Arizona	Ariz.
Blazina, Vay J. A.B. 1963, University of Washington	Wash.	Farmer, Michael F. A.B. 1963, San Francisco State College	Calif.
Botts, James S. Attended University of New Mexico	N.M.	Feen, Dennis J. B.S. 1963, Bates College	Mass.
Brewer, Craig M. A.B. 1963, University of Washington	Calif.	Fernandez-Marchese, Jose L. A.B. 1963, Johns Hopkins University	Puerto Rico
Brinckerhoff, Gilbert D. B.S. 1959, Lafayette College	Va.	Fletcher, H. Stephen B.S. 1963, Mount St. Mary's College	N.J.
Brodkin, Bruce I. A.B. 1963, Lafayette College	N.J.	Forlini, Frank J., Jr. B.S. 1963, Villanova University	N.J.
Brown, Ronald B. A.B. 1962, Ohio Wesleyan University	Ohio	Forsythe, William E. III A.B. 1963, Western Reserve University	Ohio
Carr, Stephen L. Attended University of Utah	Utah	Foster, Alan C. A.B. 1963, Franklin and Marshall College	Pa.
Chan, Wayne L. A.B. 1960, Stanford University	Calif.	Gerfin, Ernest R. A.B. 1963, Franklin and Marshall College	Pa.
Clemmer, Terry P. Attended Brigham Young University	Wash.	Gothelf, Michael J. A.B. 1963, Hobart College	N.Y.
Cohn, Burton H. B.S. in Phar. 1960, University of Pittsburgh	Pa.	Granger, Martha S. A.B. 1960, Bryn Mawr College	Colo.
Cooper, Talmadge D. III A.B. 1964, The George Washington University	Utah	Gubler, Robert J. B.S. 1963, University of Utah	Utah



Hanson, Hedric R. A.B. 1963, University of Washington	Wash.	Osborn, Chester W. A.B. 1963, Columbia University	N.Y.
Haswell, Glenn L. A.B. 1963, DePauw University	Okla.	Ouchi, Janice M. A.B. 1963, University of Southern California	Calif.
Jones, Evan D. Attended University of Scranton	Pa.	Paolino, Thomas J., Jr. A.B. 1963, Brown University	R.I.
Karas, Jacob R. Attended University of Massachusetts	Mass.	Parker, Ann L. A.B. 1963, University of California	D.C.
Kaufman, Donald G. B.S. in Phar. 1962, University of Rhode Island	R.I.	Peters, Alfred G. A.B. 1958, University of California	Calif.
Kover, Jerry H. A.B. 1963, Brooklyn College	N.Y.	Prager, Robert E. A.B. 1963, Duke University	S.C.
Kruffy, Edward L. A.B. 1963, New York University	N.Y.	Presto, Andrew J. III B.S. 1963, Duke University	N.Y.
Lebowitz, Michael S. A.B. 1963, University of Pennsylvania	N.Y.	Sampson, Robert L. A.B. 1963, Bates College	Mass.
Levin, Richard L. A.B. 1963, Franklin and Marshall College	Pa.	Saunders, Robert C. A.B. 1962, University of Washington	Wash.
Liebross, Bertram S. B.S. 1962, Brooklyn College	N.Y.	Schirmacher, Frederick D. A.B. 1963, Johns Hopkins University	D.C.
Liljenquist, John E. B.S. 1963, Brigham Young University	Va.	Schoenfeld, Lawrence V. A.B. 1963, Princeton University	N.Y.
Lipman, Frances J. A.B. 1963, Yeshiva University	Ohio	Silbert, Jerome A. A.B. 1964, The George Washington University	N.Y.
Lias, Robert A. A.B. 1964, The George Washington University	D.C.	Simon, David B. Attended Temple University	N.J.
Mahady, Ivan B. B.S. 1963, University of Scranton	Pa.	Sommers, Joan M. A.B. 1964, The George Washington University	Md.
Maier, Herbert S. A.B. 1963, Brooklyn College	N.Y.	Southwick, Edward G. B.S. in Phar. 1962, University of Utah	Utah
Mainardi, Michael B.S. 1963, Georgetown University	N.J.	Steerman, Ruth A. Attended The George Washington University	D.C.
Manetz, Charles E. B.S. in Phar. 1963, St. John's University	N.Y.	Steinkuller, Paul G. A.B. 1963, Duke University	Md.
Martinson, Alice M. A.B. 1964, The George Washington University	Md.	Sylvester, Michael J. B.S. 1963, University of Wisconsin	Ill.
Marvin, Stephen S. A.B. 1963, University of Southern California	Calif.	Tabor, George S. A.B. 1963, University of Vermont	N.Y.
McArthur, Arthur C. B.S. 1963, Brigham Young University	Utah	Thompson, William F. B.S. 1963, City College, New York	N.Y.
McCabe, John C. A.B. 1963, University of North Carolina	Md.	Thorne, Jean M. B.S. in Phar. 1958, The George Washington University	Md.
McCune, Craig S. A.B. 1962, University of Utah	Utah	Trick, Lorence W. Attended University of California	Calif.
McDavid, Billy C. A.B. 1962, University of California	Calif.	Urciolo, Constance E. A.B. 1963, Trinity College	D.C.
Miller, Lawrence H. B.S. 1962, B.S. in Ed. 1963, Ohio State University	Ohio	Weaver, Clyde M. Attended University of California	Calif.
Morrison, Stanley G. A.B. 1963, Temple University	Pa.	Whiteman, John R. Attended Catholic University of America	Md.
Musselman, Mary E. A.B. 1964, The George Washington University	D.C.	Wight, Dennis A. Attended University of Utah	Calif.
Naman, Leslie R. A.B. 1963, University of California at Los Angeles	Calif.	Wong, Art B. A.B. 1963, University of California	Calif.
Nassberg, Sheldon B.S. 1963, University of Rhode Island	N.Y.	Wood, Paul E. A.B. 1963, Drew University	N.J.
Orrock, Pat M. A.B. 1963, University of California	Calif.	Zaworaki, Daniel C. Attended Mount St. Mary's College	Ohio
		Zimmons, Paul S. B.S. in Phar. 1963, Union University	N.Y.

### THIRD YEAR

Abt, Arthur B. A.B. 1962, Rutgers, the State University	N.J.	Barham, Edward D. B.S. 1962, Mississippi College	Miss.
Adams, William R. B.S. 1962, University of Utah	Utah	Basinger, Gerald T. Attended Brigham Young University	Calif.
Alexander, Edward G., Jr. A.B. 1962, The George Washington University	D.C.	Birkin, Brent B. B.S. 1962, University of Utah	Idaho
Allen, Richard M. Attended University of Utah	Utah	Bishop, Theral M. Attended Utah State University of Agriculture and Applied Science	Utah
Ashton, Henry L. Attended University of Utah	Utah	Bryan, David C. Attended University of Southern California	Calif.

Bunnell, Gary L. Attended Utah State University of Agriculture and Applied Science	Utah	Landis, John D. A.B. 1962, West Virginia University	W.Va.
Campbell, Craig A. A.B. 1962, University of California	Calif.	Lavine, Robert L. A.B. 1963, The George Washington University	Md.
Cannava, Peter E. B.S. 1962, Mount St. Mary's College	N.Y.	Lew, Ralph B.S. 1959, University of California	Calif.
Carruth, Peter S. A.B. 1962, University of California	Calif.	Lewis, Jonathan A. A.B. 1962, Johns Hopkins University	Ohio
Chalfant, William P. A.B. 1961, University of California	Md.	Lillis, Frederick P. A.B. 1962, College of the Holy Cross	Va.
B.S. 1962, The George Washington University		Ludewig, Robert M. A.B. 1962, Ohio Wesleyan University	D.C.
Chervenak, John P. B.S. 1961, University of Pittsburgh	Pa.	Luedeman, Gerald W. A.B. 1962, Harvard University	Md.
Cooper, Richard M. Attended University of Maryland	N.J.	Mahakian, Charles G. A.B. 1962, University of California	Calif.
Datch, Michael W. A.B. 1962, Washington and Jefferson College	Pa.	Mandy, Stephen H. A.B. 1963, The George Washington University	Md.
Devoras, James E. B.S. 1962, Muhlenberg College	N.J.	Mangis, Phillip G. Attended American University	N.Y.
Don, Sherman B.S. 1956, University of California	Calif.	McBride, Jane W. Attended Stanford University	Md.
Edmonston, Robert M. A.B. 1962, Fresno State College	Calif.	McCausland, Arthur M. A.B. 1962, Duke University	Calif.
Eldredge, Walter J. B.S. 1962, University of Utah	Utah	McMullen, Douglas B. B.S. 1961, University of Idaho	Idaho
Ettenson, Stephen C. Attended New York University	N.Y.	McPherson, Warren F. A.B. 1961, University of Pennsylvania	Va.
Evans, David B. B.S. 1960, Muhlenberg College	Va.	Mountjoy, John R. A.B. 1961, Washington University	Calif.
Folmar, Raymond H. A.B. 1962, University of California	Calif.	Neviaser, Thomas J. A.B. 1962, University of Pennsylvania	D.C.
Franklin, Donald S. A.B. 1962, Washington and Jefferson College	Pa.	Nielsen, Cantril Noga, Gerald W. B.S. 1959, U. S. Military Academy	Utah Ill. D.C.
Garra, John S. B.S. 1962, St. John's University	N.Y.	Notes, David R. A.B. 1962, Harvard University	D.C.
Gettman, Thomas H. A.B. 1962, University of California	Calif.	Noyes, Frank R. A.B. 1962, University of Utah	Utah
Goldfinger, Paul A.B. 1963, Fairleigh Dickinson University	N.J.	Roush, William R. Attended Wooster College	Ohio
Grace, Rene E. Attended University of South Dakota	S.D.	Rumana, Robert H. A.B. 1962, Rutgers, the State University	N.J.
Graeber, Fred G. Attended University of Oregon	Idaho	Rush, William A., Jr. Attended University of Southern California	Calif.
Gray, Luther W., Jr. A.B. 1961, University of Pennsylvania	D.C.	Saunders, John L. A.B. 1962, University of Colorado	Colo.
Gregory, Cecilia D. B.S. 1956, M.S. 1962, University of Oregon	Md.	Scheiner, Monroe I. Attended Hobart College	N.Y.
Griffin, Charles K., Jr. A.B. 1961, University of California	Calif.	Schwartz, Howard S. B.S. 1963, University of Vermont	N.Y.
Hamilton, Raymond D. A.B. 1962, University of California	Calif.	Sherwin, Barbara E. B.S. 1959, Antioch College	D.C.
Harbold, Norris B., Jr. B.S. 1956, U.S. Military Academy	Va.	Shoemaker, Lester E., Jr. A.B. 1960, Princeton University	N.J.
Harris, James C., Jr. B.S. 1962, University of Maryland	Md.	Smith, Ronald E. B.S. 1962, University of Maryland	Md.
Haynes, Henry D. A.B. 1961, Kalamazoo College	Mich.	Stein, Mitchel J. B.S. 1962, City University of New York	N.Y.
Hennings, Charles T. Attended Mount St. Mary's College	N.Y.	Tally, Francis P. A.B. 1962, Providence College	R.I.
Hofmann, James W. B.S. 1962, College of the Holy Cross	Md.	Thatcher, Richard W. Attended Brigham Young University	Calif.
Houghton, Edward A. A.B. 1962, Earlham College	Va.	Van Sickle, David G. A.B. 1957, Colgate University	D.C.
Igdeen, William P. B.S. 1961, University of Utah	Utah	Viss, Simon P. A.B. 1959, University of California	Calif.
Kaany, Enno B.S. 1962, Springfield College	Conn.	Weber, Barry J. Attended University of Buffalo	N.Y.
Kaufman, Sam A.B. 1960, Goshen College	Ohio	Weiss, Dennis S. B.S. 1960, University of Pennsylvania	N.Y.
Ku, Robert K. Attended University of California	Hong Kong	Wilson, Robert M. B.S. 1959, The George Washington University	Md.
Kunishi, John T. A.B. 1962, University of California	Hawaii	Wilson, Ronald G. A.B. 1962, University of Colorado	Calif.



Yager, Howard S. A.B. 1963, The George Washington University	D.C.	Zappia, Rosario R. B.S. 1961, Iona College	N.Y.
Yutani, Frederick M. B.S. 1962, University of Southern California	Calif.	Zeveney, Dennis J. B.S. 1960, King's College, Pa.	Pa.

#### FOURTH YEAR

Anderson, Anthon A. III Attended Brigham Young University	Utah	Hardy, Kent M. Attended University of Utah	Utah
Bagley, Grant P. B.S. 1961, University of Utah	Utah	Hazelton, Warren C., Sr. Attended University of Maine	Maine
Balsano, Nicholas A. B.S. 1960, Iona College	N.Y.	Herr, John R. B.S. 1961, Juniata College	Pa.
Blau, Anthony D. Attended The George Washington University	D.C.	Herwick, Paul Q. B.S. in Phar. 1960, University of Pittsburgh	Pa.
Brady, John W. B.S. 1961, Marietta College	Md.	Herzinger, Raymond G. B.S. 1961, Brigham Young University	Idaho
Branch, John W. B.S. 1961, University of Maryland	Md.	Hicks, John A. A.B. 1960, Occidental College	Calif.
Bright, Robert W. A.B. 1961, Ohio Wesleyan University	Va.	Hirschberg, Stanley M. A.B. 1961, Rutgers, the State University	N.J.
Burton, Francis C., Jr. B.S. 1959, University of Utah	Utah	Hodgell, Robert D. A.B., B.S. in Med. Tech. 1959, University of Colorado	Colo.
Byler, Robert E. Attended Gettysburg College	Pa.	Jonas, Cecil R. B.S. 1960, Howard University	British Guiana
Byrd, Edward B. Attended The George Washington University	D.C.	Jones, Thomas L. Attended Brigham Young University	Va.
Carlisle, Richard W. Attended University of Utah	Utah	Kaplan, Sheldon J. Attended Colgate University	N.Y.
Cilley, Roland M. A.B. 1961, University of Maine	Maine	Kaplan, Stuart L. A.B. 1961, The George Washington University	D.C.
Clarisse, Peter D. T. A.B. 1961, Harpur College	N.Y.	Koo, Andrew H. C. Attended The George Washington University	Hong Kong
Clough, John D. B.S. 1961, The George Washington University	Md.	Koval, Norman S. B.S. 1961, The George Washington University	N.J.
Conner, Garrett H. A.B. 1958, Waynesburg College	N.J.	Lopez-Molina, Carmen M. Attended University of Puerto Rico	Puerto Rico
Daines, Sheridan L. Attended University of Utah	Utah	Lorentz, Mary M. A.B. 1961, Trinity College	Md.
Davis, Charles Y. A.B. 1961, Johns Hopkins University	Va.	Mast, William C. B.S. 1961, University of Arizona	Ariz.
Donahoe, Michael T. Attended Mount St. Mary's College	Pa.	Mathios, Anthony J. Attended University of California	Calif.
Ellison, Gerald L. B.S. 1960, American University	W.Va.	Matz, Marvin I. B.S. 1957, City University of New York	N.Y.
Farrell, Donald F. Attended University of the Pacific	Calif.	Mazzuchi, Daniel S. B.S. 1961, College of the Holy Cross	Md.
Fidler, William J., Jr. A.B. 1961, Washington and Lee University	Va.	McDougal, Bud H. B.S. 1961, University of Idaho	Idaho
Filipi, Robert G. B.S. 1961, University of the Pacific	Calif.	McElhaney, Robert D. A.B. 1961, Central Washington College of Education	Wyo.
Ford, John L. B.S. 1961, University of Maryland	Md.	McPhetres, David W. A.B. 1961, Whittier College	Alaska
Fortune, Ulla K. M. Attended Los Angeles City College	Calif.	Mering, James H. III Attended Duke University	Pa.
Fortune, William P. B.S. 1953, Springfield College	Calif.	Millward, David K. B.S. 1961, Tufts University	N.Y.
Freeland, Alan E. A.B. 1961, Johns Hopkins University	Ohio	Mitchell, John H. A.B. 1961, Ohio Wesleyan University	D.C.
Gemmen, Roger J. Attended Calvin College	Mich.	Moesinger, Robert L. Attended Weber College	Utah
Goodridge, Thomas H. A.B. 1961, Dartmouth College	Md.	Morris, Gerald G. Attended The George Washington University	Va.
Goodstein, Richard K. B.S. 1961, Michigan State University of Agriculture and Applied Science	N.J.	Musick, Roy S. B.S. 1961, American University	D.C.
Gould, Barry K. Attended The George Washington University	D.C.	Nixon, Maureen K. A.B. 1961, Catholic University of America	N.Y.
Haffner, Marlene Brings Attended Western Reserve University	Md.	Odenwald, Robert P. B.S. 1961, College of the Holy Cross	D.C.
Haffner, William H. J. A.B. 1961, Wesleyan University	N.J.	O'Neill, Thomas M. A.B. 1961, Catholic University of America	D.C.



Oxley, David W. A.B. 1961, Drake University	Iowa	Stiber, Andrew J. A.B. 1961, University of Michigan	N.J.
Paolillo, Richard D. B.S. 1961, College of William and Mary	Conn.	Stonefeld, Donald F. B.S. 1961, Ohio State University	Ohio
Pass, Elaine E. B.S. 1960, Tufts University	Conn.	Stones, Carl Attended Brigham Young University	Idaho
Politz, Lawrence Attended Duke University	D.C.	Strother, George W. B.S. 1960, University of Pittsburgh	Pa.
Pomerantz, Ruth A.B. 1961, Brooklyn College	N.Y.	Taylor, Paul C. A.B. 1961, Miami University	Ohio
Renfield, Marilyn L. Attended Duke University	Va.	Tegtmeyer, Charles J. A.B. 1961, Colgate University	Md.
Rogers, Jerry B. B.S. 1960, University of Maryland	Mo.	Ugel, Arthur R. B.S. 1961, The George Washington University	D.C.
Runge, Peter J. B.S. 1961, Villanova University	N.Y.	Vieweg, Walter V. R., Jr. B.S. 1957, U. S. Naval Academy	Va.
Secrist, Delbert L., Jr. A.B. 1961, Stanford University	Ariz.	Walen, Harry M. B.S. 1961, University of Maryland	Md.
Seymour, John C. A.B. 1961, Brown University	N.Y.	Warden, William B. Attended The George Washington University	W.Va.
Shively, Harold H., Jr. A.B. 1959, Wesleyan University	Conn.	White, Allen C. A.B. 1961, Occidental College	Calif.
Steinbrenner, Roger W. A.B. 1961, University of California	Calif.	Wolf, Robert R. A.B. 1961, Rutgers, the State University	N.J.
Stemerman, Michael B. A.B. 1961, University of Rochester	N.Y.		

## Summaries of Registration 1964-65

### NUMBER OF REGISTRANTS

Class entering 1964.....	108	Class entering 1962.....	89
Class entering 1963.....	95	Class entering 1961.....	89

### GEOGRAPHICAL DISTRIBUTION OF STUDENTS

Alaska	1	New Jersey	31
Arizona	2	New Mexico	1
California	55	New York	56
Colorado	3	Ohio	14
Connecticut	8	Oklahoma	1
District of Columbia	15	Pennsylvania	31
Florida	1	Rhode Island	4
Hawaii	1	South Carolina	2
Idaho	9	South Dakota	1
Illinois	4	Texas	1
Iowa	3	Utah	26
Kansas	1	Virginia	17
Maine	2	Washington	6
Maryland	16	West Virginia	4
Massachusetts	9	Wisconsin	1
Michigan	2	Wyoming	3
Mississippi	1	Puerto Rico	2
Missouri	1	British Guiana	1
Montana	2	Hong Kong	2

# GRADUATES OF COLLEGES REGISTERED IN THE SCHOOL OF MEDICINE

American University	2	Miami University	1
Antioch College	1	Michigan, University of	2
Asbury College	1	Michigan State University of	
Arizona, University of	2	Agriculture and Applied Science	1
Bates College	3	Mississippi College	1
Boston University	3	Montana State College	1
Brigham Young University	4	Mount St. Mary's College	4
Brooklyn College	5	Muhlenberg College	2
Brown University	3	New York University	1
Bryn Mawr College	2	North Carolina, University of	1
California, University of	23	Notre Dame, University of	1
Catholic University of America	3	Occidental College	4
Central Washington College of		Ohio State University	3
Education	1	Ohio Wesleyan University	4
Charleston, College of	1	Oregon, University of	1
Chicago, University of	2	Pacific, University of the	2
City College, New York	1	Pennsylvania, University of	7
City University of New York	6	Pittsburgh, University of	5
Colgate University	2	Princeton University	2
Colorado, University of	3	Providence College	1
Columbia University	3	Rhode Island, University of	2
Connecticut, University of	3	Rochester, University of	1
Cornell University	1	Rutgers, the State University	8
Dartmouth College	2	St. John's University (N.Y.)	3
DePauw University	2	St. Peter's College	1
Drake University	1	San Francisco State College	1
Drew University	1	Scranton, University of	3
Duke University	5	South, University of the	1
Earlham College	1	Southern California, University of	4
Fairleigh Dickinson College	1	Springfield College	2
Franklin and Marshall College	5	Stanford University	7
Fresno State College	2	Temple University	1
Georgetown University	2	Trinity College (D.C.)	2
George Washington University,		Tufts University	4
The	22	Union University	1
Goshen College	1	United States Military Academy	2
Harpur College	1	United States Naval Academy	1
Harvard University	2	Utah State University of Agricul-	
Hobart College	1	ture and Applied Science	1
Hofstra College	1	Utah, University of	12
Holy Cross, College of the	5	Valparaiso University	1
Howard University	1	Vermont, University of	2
Idaho, College of	1	Villanova University	2
Idaho, University of	2	Virginia, University of	1
Iona College	2	Washington and Jefferson College	4
Johns Hopkins University	9	Washington and Lee University	1
Kalamazoo College	2	Washington State University	1
King's College	2	Washington University (Mo.)	2
Lafayette College	5	Washington, University of	4
Lycoming College	1	Waynesburg College	1
Maine, University of	1	Wesleyan University	2
Manhattanville College of the		West Virginia University	3
Sacred Heart	1	Western Reserve University	2
Marietta College	1	Whittier College	1
Marquette University	1	Whitworth College	1
Maryland, University of	8	William and Mary, College of	2
Massachusetts Institute of		Wisconsin, University of	1
Technology	1	Yeshiva University	2
Number of College Graduates	301	Number of Colleges Represented	109

## COLLEGES AND SCHOOLS—DEGREE PROGRAMS

**COLUMBIAN COLLEGE OF ARTS AND SCIENCES:** Associate in Arts (A.A.), Associate in Science (A.S.), Bachelor of Arts (A.B.), Bachelor of Science (B.S.), Bachelor of Science in Medical Technology (B.S. in Med. Tech.), Master of Arts (A.M.), Master of Fine Arts (M.F.A.), and Master of Science (M.S.)

**GRADUATE COUNCIL:** Doctor of Philosophy (Ph.D.)

**SCHOOL OF MEDICINE:** Doctor of Medicine (M.D.)

**NATIONAL LAW CENTER:**

**LAW SCHOOL:** Bachelor of Laws (LL.B.)

**GRADUATE SCHOOL OF PUBLIC LAW:** Master of Laws (LL.M.), Master of Comparative Law (M.Comp.L.), and Doctor of Juridical Science (S.J.D.)

**SCHOOL OF ENGINEERING AND APPLIED SCIENCE:** Engineering Technologist Certificate (E.T.C.), Bachelor of Science (B.S.), Master of Science (M.S.), Master of Engineering Administration (M.E.A.), and Doctor of Science (D.Sc.)

**SCHOOL OF EDUCATION:** Bachelor of Arts in Education (A.B. in Ed.), Bachelor of Science in Physical Education (B.S. in P.E.), Master of Arts in Teaching (A.M. in T.), Master of Arts in Education (A.M. in Ed.), Education Specialist (Ed.S.), and Doctor of Education (Ed.D.)

**SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS:** Bachelor of Arts in Government (A.B. in Govt.), Bachelor of Business Administration (B.B.A.), Certificate of the Institute for Sino-Soviet Studies (Cert. of I.S.S.S.), Master of Arts in Government (A.M. in Govt.), Master of Business Administration (M.B.A.), Master of Public Administration (M.P.A.), Graduate Certificate in Health Care Administration (Grad. Cert. in H.C.A.), Doctor of Business Administration (D.B.A.), and Doctor of Public Administration (D.P.A.)

**COLLEGE OF GENERAL STUDIES:** Associate in Arts (A.A.), Associate in Secretarial Administration (A.Sec.Adm.), Bachelor of Arts (A.B.), Bachelor of Business Administration (B.B.A.), Bachelor of Science in Geodetic and Cartographic Science (B.S. in Geod. and Cart. Sc.), Master of Science in Business Administration (M.S. in B.A.), Master of Science in Financial Management (M.S. in Fin. Mgt.), Master of Science in Governmental Administration (M.S. in Govt. Adm.), Master of Science in International Affairs (M.S. in I.A.), Master of Science in Personnel Administration (M.S. in Per. Adm.), and Master of Science in Public Administration (M.S. in P.A.)



## ANNUAL ISSUES OF THE UNIVERSITY BULLETIN

*Requests for the following publications should be addressed as indicated.*

COLLEGE OF GENERAL STUDIES, Dean of the College

COURSES OF INSTRUCTION (for The Division of University Students and continuing degree candidates), Director of Admissions

STUDENT FINANCIAL AID, Director, Student Financial Aid

LAW SCHOOL AND GRADUATE SCHOOL OF PUBLIC LAW, Dean of the Law School or Dean of the Graduate School of Public Law

SCHOOL OF ENGINEERING AND APPLIED SCIENCE, Dean of the School

UNDERGRADUATE AND GRADUATE CATALOGUE (Arts and Sciences, Education, Government and Business, International Affairs), Director of Admissions

SCHOOL OF MEDICINE, Admissions Office, School of Medicine

SUMMER SESSIONS, Dean of the Summer Sessions

SCHEDULE OF CLASSES: FALL AND SPRING SEMESTERS, Registrar

SCHEDULE OF CLASSES: SUMMER SESSIONS, Dean of the Summer Sessions

---

Jessie Bigelow Martin, A.B., *Editor of Academic Publications*

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# THE GEORGE WASHINGTON UNIVERSITY

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THE NATIONAL LAW CENTER, 1959

THE LAW SCHOOL, 1865

THE GRADUATE SCHOOL OF PUBLIC LAW, 1959

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE, 1884

THE SCHOOL OF EDUCATION, 1907

THE SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS, 1928

THE COLLEGE OF GENERAL STUDIES, 1950

THE DIVISION OF UNIVERSITY AFFAIRS, 1900

THE DIVISION OF AEROSPACE STUDIES, 1951

THE SUMMER SESSIONS, 1916

THE UNIVERSITY HOSPITAL, 1898

**THE GEORGE WASHINGTON UNIVERSITY BULLETIN**

**1965-1966**

**THE COLLEGE OF GENERAL STUDIES**



**JUNE 1965**

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(3 ISSUES IN APRIL AND 2 ISSUES IN JANUARY)

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*Second Class Postage Paid at Washington, D.C.*



**THE GEORGE WASHINGTON UNIVERSITY BULLETIN**

**THE COLLEGE OF GENERAL  
STUDIES—1965-1966**

**WASHINGTON, D.C. 20006**

## CORRESPONDENCE DIRECTORY

Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Director of Admissions, The George Washington University, Washington, D. C. 20006.

Information concerning courses of instruction, programs, and faculties of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on page 144.

<i>General Admission</i>	Director of Admissions, Building C
<i>Law School Admission</i>	Dean of The Law School
<i>School of Medicine Admission</i>	1339 H Street NW.
<i>Aerospace Studies (AFROTC)</i>	Director of the Division of Aerospace Studies, Chapin Hall
<i>Alumni Association</i>	Alumni Office, Bacon Hall
<i>Medical Alumni Association</i>	1335 H Street NW.
<i>Foreign Students</i>	Director of Foreign Student Affairs, Building T
<i>Men's housing</i>	Dean of Men
<i>Women's housing</i>	Dean of Women
<i>Fellowships, Scholarships, and Loans</i>	Director, Student Financial Aid
<i>Student Employment</i>	Student Placement Office, 2114 G Street NW.
<i>Summer Sessions</i>	Dean of The Summer Sessions
<i>Transcripts of Records</i>	Registrar, Building C
<i>Veterans Education</i>	Director of Veterans Education

### GRADUATE STUDY:

<i>Master's degrees in Arts and Sciences</i>	Dean of Columbian College of Arts and Sciences
<i>Doctor of Philosophy</i>	Dean of The Graduate Council
<i>In Education</i>	Dean of The School of Education
<i>In Engineering or Applied Science</i>	Dean of The School of Engineering and Applied Science
<i>In Law</i>	Dean of The Graduate School of Public Law
<i>In Accounting, Business Administration, Business and Economic Statistics, Economic Policy, Health Care Administration, International Affairs, Personnel Administration, Public Administration, Public Affairs</i>	Dean of The School of Government, Business, and International Affairs





*Fall Semester 1965*

**SEPTEMBER**

S	M	T	W	T	F	S
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**OCTOBER**

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**NOVEMBER**

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**DECEMBER**

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*Spring Semester 1966*

**JANUARY**

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**MARCH**

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**MAY**

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**JUNE**

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*Summer Semester 1966*

**JUNE**

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**JULY**

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**AUGUST**

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**SEPTEMBER**

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18	19	20	21	22	23	24
25	26	27	28	29	30	..

# COLLEGE OF GENERAL STUDIES

## CALENDAR\* 1965-1966

### 1965 FALL SEMESTER

- September 1-30* Off-Campus registration † (Days of registration and beginning classes will be announced in *Off-Campus Schedule of Classes*.) Application for February graduation due as part of registration
- September 8-15* Campus advising: freshmen *Wednesday-Wednesday*
- September 13* Orientation Assembly required of all new Campus students *Monday*
- September 13* Curriculum Assembly required of all new Campus students *Monday*
- September 13-14* Placement tests for Campus students *Monday-Tuesday*
- September 13-15* Campus advising: upper-class students, transfers *Monday-Wednesday*
- † *September 16-18* Registration on Campus† *Thursday-Saturday*. Application for February graduation due as part of registration
- September 20* Classes begin on Campus *Monday*
- September 25* CGS meeting of Staff of Instruction, 10:30 a.m. *Saturday*
- October 1* Subjects of Master's theses of February candidates due in Dean's Office *Friday*
- November 11* Veterans Day (holiday) *Thursday*
- November 25-27* Thanksgiving recess *Thursday-Saturday*
- December 4* Graduate Record Examinations *Saturday*
- December 17-18* Master's comprehensive examinations *Friday-Saturday*
- December 20-January 1* Christmas recess *Monday-Saturday*
- January 3* Campus classes resume *Monday*
- January 3* Master's theses of February candidates due in Dean's Office *Monday*
- January 10-February 4* Off-Campus registration † (Days of registration and beginning classes will be announced in *Off-Campus Schedule of Classes*.) Application for June graduation due as part of registration
- January 12* Last day of Campus fall-semester classes *Wednesday*
- January 15-22* Campus examination period *Saturday-Saturday*

\* Off-Campus courses organized at any time.

† Application for graduation, Graduate Record Examinations, Master's comprehensive examinations is student's responsibility and must be made when registering for last courses required for degree.

‡ Thursday and Friday, from 12:00 to 8:00 p.m.; Saturday, from 10:00 a.m. to 1 p.m.

## 1966 SPRING SEMESTER

- January 17-26* Campus advising: freshmen, sophomores, and all new students  
*Monday-Wednesday*
- January 24* Campus placement tests *Monday*
- \* *January 27-29* Registration on Campus † *Thursday-Saturday*. Application for June graduation due as part of registration
- January 28* Orientation Assembly required of all new Campus students  
*Friday*
- January 31* Campus classes begin *Monday*
- February 4* Subjects of Master's theses of June candidates due in Dean's Office *Friday*
- February 5* CGS meeting of Staff of Instruction, 10:30 a.m. *Saturday*
- February 21* Winter Convocation *Monday*
- February 22* George Washington's Birthday (holiday). *Tuesday*
- April 2* Graduate Record Examinations *Saturday*
- April 4-11* Spring recess *Monday-Monday*
- April 12* Campus Classes resume *Tuesday*
- April 22-23* Master's comprehensive examinations *Friday-Saturday*
- April 29* Master's theses of June candidates due in Dean's Office *Friday*
- May 18* Last day of Campus spring-semester classes *Wednesday*
- May 19* Education Directors Luncheon, Lisner Lounge, 12:30 p.m.  
*Thursday*
- May 21-27* Campus examination period *Saturday-Friday*
- May 30* Memorial Day (holiday) *Monday*
- June 5* Baccalaureate Service *Sunday*
- June 5* Commencement *Sunday*

## 1966 SUMMER SESSIONS †

- June 1-10* Off-Campus registration *Wednesday-Friday*
- July 16* Master's comprehensive examinations *Saturday*

Campus registration for fall semester 1966-67, *Thursday* through *Saturday* morning, September 15-17.

\* Thursday and Friday, from 12:00 to 8:00 p.m.; Saturday, from 10:00 a.m. to 1 p.m.

† Application for graduation, Graduate Record Examinations, Master's comprehensive examinations is student's responsibility and must be made when registering for last courses required for degree.

‡ Dates of Campus courses will be announced in the Calendar of the 1966 Summer Sessions Catalogue, published in December 1965.



## **THE COLLEGE OF GENERAL STUDIES**

THE COLLEGE OF GENERAL STUDIES was established in 1950 to extend the educational facilities of the University, introduce experimental programs of study for mature students, and provide educational services other than formal programs of study.

In addition to degree programs it conducts conferences, seminars, and noncredit programs.

### **ACADEMIC STANDARDS**

Courses are taught by members of the regular University staff of instruction and other individuals of recognized academic and professional competence.

The academic standards of the University are maintained in off-campus credit courses.

Limits on the size of classes may be imposed in order to maintain the quality of instruction.

The College of General Studies is a member of the Association of University Evening Colleges and the National University Extension Association.

### **OFF-CAMPUS STUDY**

The College of General Studies works closely with personnel administrators, education directors, school officials, and others interested in developing programs of in-service training, in response to increased demands of government, education, business, and industry. Programs are also offered for service personnel who wish to work toward

degrees or for professional proficiency. Off-Campus Centers are listed on pages 55-73.

#### **TYPES OF PROGRAMS**

The College offers courses in liberal arts, education, and business administration for which there is a sufficient demand and for which qualified instructors can be found regardless of whether such courses are included in the regular offerings of the University. According to the subject matter and the wish of the organizing group, credit courses applicable toward degrees and noncredit courses are arranged.

For information concerning arrangements for courses of programs of study, Telephone 965-2350 or write to the College of General Studies, The George Washington University, Washington, D. C. 20006.

#### **PROFESSIONAL IN-SERVICE TRAINING**

Programs are offered to meet the in-service needs of special groups and others will be developed as the need arises. If courses are taken for credit, the prerequisites must be met.

#### **HOW TO ORGANIZE A PROGRAM**

Any organization, group, installation, or agency interested in having the University organize and conduct a course or a comprehensive educational program, should get in touch with the Assistant Dean (Administration) of the College of General Studies, Telephone 965-2350. A representative will be sent upon request to discuss organizational plans.

#### **TELEVISION AND RADIO**

The University produces television programs, credit for which is applicable toward degrees. As the occasion arises, noncredit radio courses are also offered. In cooperation with Station WTOP (Channel 9), the University makes the textbooks and reading lists of New York University's "Sunrise Semester" available.

For information about television and radio offerings, call the College of General Studies: 965-2350. The coordinator for television programs and radio courses is Lillian Brown, Director of Radio and Television.

#### **CAMPUS STUDY**

Off-campus degree candidates may register for campus courses approved for their programs, if these courses are not conveniently available at off-campus centers. Permission for on-campus registration must be obtained from the Dean of this College at least two weeks prior to the date of campus registration.

Service personnel who wish to study full-time at the University may register for campus courses through the College of General Studies if they meet the following requirements. Permission of the Dean is required for concurrent enrollment in off-campus courses.

1. The applicant must be in attendance under official orders which give him a specified time in which to finish his degree requirements.

2. He must prove that the degree requirements can be completed in the time specified in his orders only by taking advantage of the advanced standing provisions of this College.

3. He must be in a position to enroll for full-time study.

In cooperation with the Naval Medical School (and the National Naval Medical Center, Bethesda, Maryland), a program in anesthesia is conducted for Officers of the Navy Nurse Corps, to help them meet the requirements for certification as registered nurse anesthetists. Selected students attend full-time campus classes as well as an off-campus course in anesthesiology offered at the National Naval Medical Center.

The Air Force Advanced Management Program, sponsored by the United States Air Force Institute of Technology, provides 50 semester hours of work in advanced management and supporting fields through the educational facilities of the School of Government, Business, and International Affairs for a selected group of Air Force officers. Those officers who qualify by a combination of academic background and the satisfactory completion of this program may be awarded a Bachelor's degree by the College of General Studies. Officers who already hold Bachelor's degrees may take these courses for graduate credit toward the Master of Business Administration degree in the School of Government, Business, and International Affairs. Campus Director and academic adviser: Richard Adrian Barrett, Hall of Government, Room 205 (710 Twenty-first Street NW.), Telephone 338-0250, Extension 404 or 588.

## Admission

### TO COURSES

REGISTRATION IN AN OFF-CAMPUS COURSE constitutes admission to that course only and does not constitute admission to degree candidacy or to campus courses of the University. Credit courses may count toward a degree in any school or college of the University if the student is accepted as a degree candidate and the course is approved by the appropriate dean. Credits may also be transferred to other colleges or universities.

For administrative counseling call the College of General Studies, Telephone: 965-2350.

Only students who have been formally admitted to degree candidacy in this College may enroll as full-time students (for 12 semester hours or more). Those who have recently graduated from high school and wish to be *full-time freshmen* students at this University should apply for admission to the appropriate college or school on campus.

### CREDIT COURSES

Registration is conducted before or at the first meeting of each class. Transcripts of previous academic work are not required. Registration



is restricted to those whose qualifications indicate that they are able to complete the courses successfully.

*Auditing.*—With the permission of the instructor, adequately prepared students may register as "Auditors." An auditor is not required to take active part in the exercises or to take examinations. No grades will be reported and no credit will be granted. Tuition is the same as for credit courses. If a course has 15 sessions a student may, with the approval of the Dean, change from credit to audit status prior to the 10th class session. If a course has 30 sessions, a student may, with the approval of the Dean, change from credit to audit status prior to the 20th class session. A student will not be permitted to change from audit to credit status after the second class session of any course.

*Concurrent Registration.*—A student registered as a degree candidate in any other college or school of the University may take credit courses in the College of General Studies only by permission (granted prior to registration) of the dean of the college or school concerned. A "College of General Studies Off-Campus Registration Permit" form must be obtained at the office of the appropriate college or school, signed by the dean of that college or school, and presented at the time of registration in the College of General Studies.

Service personnel enrolled full time for campus courses need the Dean's permission to register concurrently for off-campus courses.

#### NONCREDIT COURSES

Noncredit courses are open to anyone interested in enrolling. When a course is organized at the request of a particular agency or group, admission may be restricted to the students recommended by the sponsoring organization.

### TO UNDERGRADUATE DEGREE CANDIDACY\*

Application for degree candidacy may be made prior to or after the first registration with the College or after completion of 15 hours of course work (see criteria for eligibility specified below in I. B and II. B). Application should be made only if there is a reasonable assurance that the student will be in the area long enough to complete degree requirements. When a student is choosing courses in order to be considered for degree candidacy, it is of particular importance that counseling be obtained through a Field Representative. Appointments may be made by telephone (965-2350) or through the Installation Education Director.

The following factors are considered as paramount in determining the eligibility of an applicant:

1. The adequacy of previous academic work as preparation for the course of study contemplated, including quantity and quality of work and the standing of the institution in which it was done.
2. Results of specified tests, as prescribed in this catalogue or by the Committee on Undergraduate Admission and Advanced Standing.
3. The aptitude of the student for the curriculum contemplated.
4. The character of the student.

\* For admission to Master's degree candidacy, see page 39.

## METHODS OF ADMISSION

### I. FROM SECONDARY SCHOOLS

A. Consideration for immediate admission is given to applicants for degree candidacy who present the combined evidence of (1) an acceptable certificate of graduation from an accredited secondary school, showing a minimum of fifteen "units" \* in a college preparatory or academic curriculum; (2) the principal's statement that the applicant is adequately prepared to undertake college work with reasonable prospect of success; (3) College Entrance Examination Board scores on the Scholastic Aptitude Test and the English Composition Achievement Test (for students out of high school several years, appropriate other tests may be prescribed).

B. Mature students who do not meet the formal requirements stated above may be considered for degree candidacy if they complete at least 15 semester hours of the following "distributed" course work in this College with a grade average of C or better. Courses taken to qualify for candidacy must include English 1 or 1x and 2, *English Composition*, and courses in at least two of the following areas: Humanities (literature, philosophy, foreign languages), Social Science (anthropology, economics, geography, history, political science, and sociology), and Natural Science and Mathematics. Each application will be judged on its individual merits, with primary emphasis being given to the quality of work done in this College and the maturity of the student.

In either case, the applicant must send the high school record form, available at the Office of the Director of Admissions or at the College of General Studies, to his high school principal with the request that the principal fill it out and mail it directly to the Office of the Director of Admissions, The George Washington University, Washington, D. C. 20006. The application for admission to degree candidacy should be accompanied by a \$15 application fee and a recent signed photograph.

### II. FROM HIGHER INSTITUTIONS

A. Consideration for immediate admission with advanced standing is given to applicants for degree candidacy upon presentation of an adequate record from an accredited institution of higher learning.

B. Applicants whose previous record raises doubt of their ability to complete successfully degree requirements must complete at least 15 semester hours of course work in this College with a quality-point index of 2.50 or better in order to be considered for degree candidacy. Courses taken to qualify for candidacy must be distributed over two or more areas as prescribed in paragraph B, section I above.

Properly certified courses taken at accredited colleges or universities may be applied toward a degree in the College of General Studies, subject to the curriculum requirements of the degree program for which admission is sought. Work of low passing grade (such as D or the equivalent) is not acceptable for transfer. However, a course in which a grade of D was received may be used to satisfy the curriculum

\* A unit represents a year's study in a secondary school subject, including in the aggregate no less than 120 sixty-minute periods, or the equivalent, of prepared classroom work.

requirement, but may not be counted toward the total number of semester hours required for the degree.

The University reserves the right to refuse credit for transfer in whole or in part, or to allow it provisionally. Credit so given may be withdrawn for subsequent poor work.

It is the responsibility of the student to have an official transcript sent directly from each institution formerly attended to the Office of the Director of Admissions, The George Washington University, Washington, D. C. 20006.

If the transcript from a higher institution includes the record of his secondary school work, it is not necessary for the applicant to have forwarded a separate record from the principal of the secondary school.

#### ADVANCED STANDING

In addition to credit allowed in transfer from other accredited colleges or universities, see "From Higher Institutions," a maximum of 30 semester hours of advanced standing may be obtained by any combination of the following methods.\*

##### 1. Service Schools

A maximum of 30 semester hours may be obtained on the basis of service schools satisfactorily completed, as evaluated in accordance with the American Council on Education, "Guide to the Evaluation of Educational Experience in the Armed Forces." Ordinarily such subjects are counted as electives. No credit will be allowed for military experience as such.

##### 2. Validating Examinations

A maximum of 30 semester hours may be obtained by validating examinations. With the approval of the Dean or the Assistant Dean (Academic Affairs) and the department concerned, permission to take such examinations is granted those who are qualified by work experience and background. Validating examinations must be completed during the first calendar year in which the student is registered as a degree candidate. The fee for each 3-hour course examination is \$60.

##### 3. Correspondence Courses

A maximum of 15 semester hours may be earned through the successful completion of correspondence courses of college level which are on the approved list of The George Washington University.

#### EXAMINATION FOR WAIVING CURRICULUM REQUIREMENTS

During the first full semester of degree candidacy, a student wishing to omit a required course may, with the permission of the Dean, take a waiver examination, the passing of which relieves him of the curriculum requirement and qualifies him for registration in an advanced

\* The granting of credit by this College for service schools and correspondence courses is the result of careful but often subjective evaluation and may or may not be accepted by another institution or by other schools and colleges of this University.



course. *Passing of the waiver examination does not entitle the student to credit toward a degree.* The fee for each 3-hour course examination is \$5.

### FURTHER INFORMATION

For detailed information concerning advanced standing acceptable in the curriculum contemplated, see "Advanced Standing" under the degree concerned.

### Fees

*All fees should be paid by check or money order*

The following fees were adopted for the academic year 1965-66.

#### Tuition Fees

##### On-Campus:

Full-time program (12 to 18 hours), each semester \*... \$700.00

Part-time program or hours in excess of 18, for each semester hour \* ..... 46.00

##### Off-Campus:

For each semester hour for which a student registers †... 30.00

The Education Program of the Armed Forces may defray a maximum of \$14.25 a semester hour, for service personnel.

#### Special Fees

Application fee (degree candidate) nonrefundable..... \$15.00

Graduation Fees, due and payable at the time of registration for the last semester or summer session

Associate in Arts, Associate in Science, Associate in Secretarial Administration ..... 10.00

Bachelor's or Master's degrees..... 25.00

Graduate Record Examination fee (to cover two examinations), charged each candidate for a Bachelor's degree in the College of General Studies. (For procedure, see Graduate Record Examination, pages 20-21..... 10.00

Fee for binding 3 copies of the Master's thesis..... 6.00

Withdrawal fee, charged in special cases..... 5.00

Reinstatement fee, for reinstatement after financial suspension ..... 10.00

\* Payment of tuition for a Master's thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. The student must, however, maintain "continuous registration" (see pages 19-20) during this period. If the preparation of the thesis extends beyond a two-year period the student must register for the entire 6 hours of thesis again and pay tuition as for a repeated course.

† Except in War College programs.

Continuous Registration fee, <i>off-campus degree candidates</i> , to maintain "continuous registration" during any semester of absence from the University *	30.00
Continuous Registration fee, <i>on-campus degree candidates</i> , to maintain "continuous registration" during any semester of absence from the University or after completion of tuition requirements *	46.00
Fee for each examination to waive a curriculum requirement	5.00
Validating Examination fee	60.00
Transcript fee, charged for each transcript of record	1.00

## PAYMENT OF FEES

### OFF-CAMPUS COURSES

Fees for each semester are due and payable in full at the time of each registration, however, students registering for *fifteen-week credit courses* may sign a contract at each registration to make payments as follows:

Students not receiving tuition assistance Payable in 3 equal installments: the first at time of registration; the second, 30 days after the beginning of the course; the third, 60 days after the beginning of the course. See *Off-Campus Schedule of Classes* for second and third tuition installment due dates.

Students receiving tuition assistance Payable in 2 equal installments: the first at time of registration; the second, 30 days after the beginning of the course.

Payments are due at the stipulated times even if the student has not received a fee-due reminder notice from the University

For eight-week credit course Payable in full at registration

For noncredit course Payable in full at registration

**Financial Suspension.**—A student who fails to meet tuition payment when due is automatically suspended and may not attend classes until he has been officially reinstated and paid all accrued fees and a \$10 reinstatement fee.

### CAMPUS COURSES

For regulations governing the payment of fees for Campus courses, see the appropriate catalogue of the University.

## REFUND OF FEES

### OFF-CAMPUS COURSES

In no case will a refund of fees be made for eight-week credit courses or for noncredit courses unless the course is cancelled.

**Fifteen-week credit course.**—In no case will the first third of the tuition cost be refunded unless the course is cancelled. Two-thirds of the

\* Payment of the continuous registration fee entitles the student who is granted leave of absence to return and continue his work toward a degree under the academic requirements which were in force at the time of his first registration. The continuous registration fee applies toward neither financial nor residence requirements for the degree.

total charge will be waived or refunded if the course is dropped within the first 30 days. One-third of the total cost will be waived or refunded if the course is dropped within the second 30 days. No refund will be allowed on withdrawal subsequent to the second 30-day period. In no case will tuition be reduced or refunded because of absence from classes.

This regulation does not apply if a student withdraws from one course to enter another, or if a class is cancelled because of insufficient enrollment.

#### CAMPUS COURSES

For regulations governing refund of fees for Campus courses, see the appropriate catalogue of the University.

## Regulations

### AMOUNT OF WORK

ONLY STUDENTS who have been formally admitted to degree candidacy in this College may enroll as full-time students, whether or not they are employed less than 20 hours a week. Students taking course work to qualify for degree candidacy in this College may take not more than 10 hours in a semester.

A full-time student who is not on probation may take ordinarily not more than 17 semester hours. A student employed more than 20 hours a week, who is not on probation, may take not more than 10 hours.

A full-time student whose quality-point index is 3.50 or higher may take not more than 19 hours. An employed student who meets the same standard may take not more than 12 hours.

A student on probation normally may take not more than 3 semester hours.

A student who accepts employment after registration or at any time during a semester must report that fact immediately to the Dean so that his program may be adjusted, if necessary.

### ATTENDANCE

The student is held responsible for all of the work of the course and all absences must be excused by the instructor before provision is made for the student to make up work missed.

Absences are excused if the number of class hours missed does not exceed the semester hours for the course. In a fifteen-week course in which classes meet once a week, *one* unexcused absence is permitted. In a fifteen-week course in which classes meet twice a week, *two* unexcused absences are permitted. In an eight-week course meeting twice a week, *one* unexcused absence is permitted.

Absences immediately preceding or following holiday periods are counted double.



Excuses for two or more consecutive class periods, and for absences from examinations which have been announced in advance, may be obtained only by making written application to the instructor.

### INDEPENDENT STUDY PLAN

A student of demonstrated capacity and with special interest in the subject matter of a course may be permitted to undertake independent study and readings under the personal direction of an instructor, in accordance with the rules of the department or departments concerned. Credit under this plan is limited to the specific course credits as listed in the courses of instruction.

### SCHOLARSHIP

#### GRADES

Grades are mailed to the student through the Office of the Registrar at the close of each semester. They are not given out by instructors or the administrative staff of the College.

*Undergraduate Grading System.*—A, excellent; B, good; C, average; D, passing; F, failing; CR indicates credit. Whenever a grade has not been assigned, the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be assigned. The symbol *I* indicates that a satisfactory explanation has been given the instructor for the student's failure to complete the work of the course. An "incomplete" cannot be made up after the lapse of one calendar year, except by written permission of the Dean's Council. An incomplete which is not removed within one calendar year is automatically changed to an *F*.

A student may not repeat, for grade, a course in which he has received a grade of *D* or above, unless required to do so by the department concerned. A written statement to this effect must be submitted to the Dean by the appropriate departmental chairman.

*Graduate Grading System.*—Grades for graduate work are A, outstanding; B, high quality; C, minimum quality; F, failure; and I, incomplete. CR indicates credit.

An average of B or better is required for the Master's degree. The grade of C is not considered as failing but must be counterbalanced by a grade of A in a graduate course of equal status.

A Master's candidate who receives a grade of F is required to present cause for consideration by the Dean's Council as to why he should be allowed to continue his studies.

Whenever a grade has not been assigned, the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *I* indicates that a satisfactory explanation has been given to the instructor for the student's failure to complete the required work of the course. An "incomplete" cannot be made up after the lapse of one calendar year except by written permission of the Dean's Council. An incomplete which is not removed within one calendar year is automatically changed to an *F*. An incomplete cannot be removed by reregistering for the course.

## QUALITY-POINT INDEX

Quality points are computed from grades as follows:

For each semester hour of the letter grade—*A*, 4 points; *B*, 3 points; *C*, 2 points; *D*, 1 point; *F*, no points.

Scholarship is computed in terms of the quality-point index. This is done by dividing the total number of quality points by the total number of semester hours for which the student has registered. Example: if a student received an *A* in one three-credit course, and a *B* in another three-credit course, he would compute his quality-point index in this way:

$$\begin{array}{r} A = 4 \times 3 \text{ (semester hours)} = 12 \\ B = 3 \times 3 \text{ (semester hours)} = 9 \\ \hline 6 \qquad \qquad 21 \div 6 = 3.5 \text{ quality-point-index} \end{array}$$

Courses marked *W* or *I* are not considered in determining the index, except that courses marked *I* will be considered when a formal grade is recorded. An incomplete which is not removed within one calendar year is automatically changed to an *F*. Grades in courses taken at other institutions are not considered in computing the quality-point index.

## WARNINGS

At stated intervals during the academic year students who are doing work of *D* grade or lower in courses with departmental numbers below 100, receive "warnings." A "warning" constitutes notice to the student that he must consult his instructor and his adviser at the earliest opportunity. "Warning periods" are established during the seventh and eighth weeks of fifteen-week courses, and during the third and fourth weeks of eight-week courses.

## PROBATION

A student must maintain a quality-point index of at least 2.00 or be placed on probation.

A student who has attempted 12 or more semester hours of work and whose quality-point index is between 1.50 and 2.00 is placed on probation for the period in which he attempts 12 additional semester hours of work. If his quality-point index is still below 2.00 at the end of this probationary period he is suspended. The Committee on Scholarship reserves the right to extend the period of probation even if the student has earned an average of above 2.00. A student placed on probation for a third period, whether successive or after an interval, is suspended.

## SUSPENSION \*

A student who has attempted 12 or more semester hours of work and whose quality-point index is below 1.50 is subject to suspension; however, a student who has a quality-point index between 1.40 and 1.50 is considered by the Committee on Scholarship, which may retain him on probation or suspend him.

\* For Financial Suspension see "Payments of Fees," page 14.

A student who is subject to probation for the third time, whether successive or after an interval, is suspended.

A student suspended for poor scholarship cannot register for courses even as an auditor. He may apply for readmission after an interval of one calendar year. He must then submit evidence to the Committee on Scholarship that he is better qualified to pursue college work. A student suspended twice for poor scholarship will not be readmitted.

#### READMISSION

A student who withdraws, is suspended, or is otherwise absent from the University for one semester or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return. Forms for readmission may be obtained from the Office of Admissions of the University. Complete and official transcripts from each institution the student has attended since making his previous application must be sent to the Office of the Director of Admissions before his application for readmission can be evaluated.

#### CHANGES IN PROGRAM OF STUDIES

##### DROPPING A COURSE OFF CAMPUS

Courses meeting once or twice a week for 2½ hours may be dropped without academic penalty during the first 10 class periods, and courses meeting once or twice a week for 1¼ hours may be dropped without academic penalty during the first 20 class periods.

Withdrawing from a course without academic penalty after the 10th or 20th class meeting, as the case may be, requires approval of a written request, which should be addressed to the Dean of the College of General Studies.

*Procedure for dropping courses.*—An *Off-Campus* drop slip (obtainable from the instructor, installation education director, or the College of General Studies) must be completed; signed and dated by the instructor; and submitted, in person or by mail, to the College of General Studies.

Notifying an instructor of the intention to drop a course does not constitute an *official withdrawal*. Failure to follow the proper procedure will result in an automatic grade of *F* and, regardless of the time of discontinuance, will not relieve the student of financial responsibility for the entire course. (See "Refund of Fees" pages 14-15.)

##### DROPPING A CAMPUS COURSE

A *Campus* drop slip (available at the Office of the Dean) must be completed; signed and dated by the instructor; and submitted, in person or by mail, to the College of General Studies.

Withdrawal between the last working day \* in October and the end of the fall semester and between the last working day \* in February and the end of the spring semester is permitted only in exceptional cases.

\* The University work week is Monday through Friday, inclusive.



*All charges for courses dropped without the approval of the Dean must be met by the student. Reporting the dropping of a course to an instructor does not constitute an official withdrawal.*

#### TRANSFER WITHIN THE UNIVERSITY

Transfer to the College of General Studies, as a degree candidate, from another college, school, or division of the University may be made only with the approval of the deans concerned. Application for transfer should be made on the transfer form, which is available at the Office of the Director of Admissions. An insert form, obtainable at the College of General Studies, must also be completed. Upon transfer the student should consult the Dean and understand clearly the requirements he must fulfill.

A maximum of 45 semester hours is transferrable toward an Associate's degree; 90, toward a Bachelor's degree; and 18, toward a Master's degree. Students transferring within the University are advised to note the residence requirements of the degree sought.

#### CREDIT

Credit toward a degree is given only after registration for and satisfactory completion of the required work of courses in the University, or upon the granting of advanced standing in accordance with the regulations of the College.

On request the Registrar will issue to undergraduate degree candidates a balance sheet showing the amount of work completed and the requirements remaining to be met for the degree. A second balance sheet will be issued only in the event the student changes major or degree objectives.

In special instances, a person who has been admitted to the University may be registered, with the permission of the instructor, as an "auditor" in a class (no academic credit). An auditor is not required to take active part in the exercises or to take examinations. A student who takes a course as an auditor may not take the same course later for credit.

#### TRANSCRIPTS OF RECORD

Official transcripts of student records will be issued on request of the student or former student. A fee of one dollar is charged for each transcript. No certificate of work done will be issued for a person who does not have a clear financial record.

#### CONTINUOUS REGISTRATION

Degree candidates are expected to maintain continuous registration until *all* degree requirements are satisfied. Students who have completed course registration (including the thesis) maintain continuous registration by paying the "continuous registration" fee (see page 14). By failing to register for one semester or more, the student breaks his registration and must be readmitted (see "Readmission," page 18). A "Readmitted Student" is required to satisfy the curriculum requirements existing at the time of his readmission.

Students must be registered during the summer if they elect to take courses, are taking required examinations, are receiving guidance toward theses, or are expecting to graduate at the end of the Summer Sessions.

## GRADUATION REQUIREMENTS

To be recommended for graduation a student must have met the admission requirements of the College; completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered; and be free from all indebtedness to the University. Registration, either for course work or on the "continuous registration" fee basis, is required for the semester or summer session immediately preceding the awarding of the degree. For the War Colleges program, which is on a different academic year schedule, registration in the last semester of the academic year of that War College fulfills this requirement.

*Application for Graduation.*—Application for graduation must be filed and the appropriate fee paid at the time of registration for the last semester or summer session of the senior or final year. Students completing degree requirements during the Summer Sessions will be awarded diplomas (no formal Convocation) September 30, 1965 provided they have completed all degree requirements and have applied for graduation as a part of registration for the Summer Sessions.

*Scholarship.*—The undergraduate must have a general quality-point index of 2.00. Candidates for the Bachelor's degrees must, in addition, have a quality-point index of 2.50 in the major. An average of B or better is required for the Master's degrees (see page 16).

*Curriculum.*—See the requirements for the degree concerned.

*Residence.*—A student is "in residence" only when registered for course work after making application for admission to degree candidacy or for the 15 semester hours undertaken to qualify for degree candidacy (see the specific residence requirements for the degree concerned).

With the permission of the Dean, a student may be granted leave of absence; such student should, however, remain technically in residence by paying the continuous registration fee for each semester he is absent. For the purpose of this regulation, the summer session is disregarded.

By special arrangement, service personnel who receive military transfers when they are within 6 hours of a degree may be permitted to complete their work elsewhere, transfer these credits to the College of General Studies, and receive a degree from this University. This procedure does not apply to Master's candidates who have been granted 6 hours of transferred credit.

*Graduate Record Examination.*—Since a growing majority of graduate schools throughout the country have the Graduate Record Examination as an admission requirement and many states require it for teacher certification, all senior or final year candidates for the Bachelor's degrees in the College of General Studies are required to take the Graduate Record Examination, which provides a measure of general

scholastic ability at the graduate level; and Area Tests (achievement), which measure breadth of knowledge and understanding in three broad areas of the liberal arts: Natural Science, Social Science, and the Humanities. The examinations are conducted by the University twice a year: the Fall Testing Session for students graduating in February, and the Spring Session for those graduating in June. Students expecting to complete degree requirements during the Summer Sessions should take the examination in the Spring Session. Dates for the examination are announced in the *Off-Campus Schedule of Classes*.

As a part of registration for the final semester of undergraduate study, each student is responsible for applying for the Graduate Record Examination. Application is to be made on the appropriate form and sent to the Assistant Dean (Administration), College of General Studies, together with a check or money order for \$10, made out to The George Washington University.

Students will receive individual reports of test scores and may avail themselves of the regular transcript services of the Educational Testing Service. By special permission, students who expect to graduate in June may take the Graduate Record Examination at the previous Fall Testing Session, so as to have transcripts available early in the year when applying for admission to graduate schools.

**Attendance and Conduct.**—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

**Thesis.**—A thesis, submitted in partial satisfaction of requirements for the Master's degree, must be submitted in its final form to the Dean no later than the date specified in the calendar. Three complete copies of each thesis are required. It is the responsibility of the candidate for a graduate degree to obtain from the Dean a printed copy of the regulations governing the styling and reproduction of the thesis. These regulations are rigidly enforced. (See page 39).

Accepted theses, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the Dean.

#### HONORS

**Dean's List.**—To be eligible for inclusion on the Dean's List, a student must be a candidate for an undergraduate degree in the College of General Studies. Course work taken while the application for admission is being processed will be computed in determining eligibility for the Dean's List. A full-time degree candidate must have a minimum quality-point index of 3.50 for the semester concerned; a part-time degree candidate must have a quality-point index of 3.50 on the last 12 semester hours of work and must have maintained continuous registration for at least one three-hour course during the period concerned. Eligibility for inclusion again will be determined on the basis of the subsequent 12 semester hours of work.

**With distinction.**—The undergraduate degrees may be conferred "with distinction," at the discretion of the Dean's Council of the College and the Committee on Scholarship of the University, if a student attains



a quality-point index of 3.50 or higher on all work taken at this University. To be eligible for this honor a student must have completed at this institution at least one-half of the course work required for the degree.

*Special honors.*—Special honors may be awarded to any member of the graduating class for outstanding achievement in the student's major field of work on recommendation of the major department, under the following regulations:

1. The student must have his candidacy for special honors approved by the faculty member representing the major department or field not later than the beginning of the senior year.

2. The student must meet such other conditions as may be set at the time his candidacy is approved.

3. No student will be awarded special honors unless he has a quality-point index of at least 3.00 on all work taken at this institution.

4. To be eligible for honors a student must have completed at this institution at least one-half of the academic course work required for the degree.

#### DISHONESTY

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Dean's Council) for subsequent registration in any unit of the University.

Evidence of dishonesty on the part of any student will result in his suspension by the Dean upon recommendation of the Dean's Council.

A student found guilty of dishonesty will be suspended for a stated period and will be deprived of credit for all courses in which he is enrolled during the semester in which the dishonest act occurs. A disciplinary grade of "Failure—Academic Dishonesty" will be recorded for each such course, and this grade will be employed in computation of the quality-point index.

If a student suspended because of academic dishonesty should be readmitted, he may be required to repeat for grade all courses for which a disciplinary grade has been recorded, and both the grade earned on repetition and the disciplinary "Failure—Academic Dishonesty" grade will be employed in computation of the quality-point index.

#### THE LIBRARY

A student registered in the College of General Studies is entitled to the reference use of the University Library. A library card is issued to each student.

The loan period for most books available for home circulation is two weeks, with an additional two-week renewal. A fine of five cents will be charged for each day a book is overdue. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for

each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

The hours of the University Library are: Monday through Friday, 9:00 a.m. to 10:00 p.m.; Saturday, 9:00 a.m. to 5:00 p.m.; Sunday, 2:00 to 10:00 p.m.

### **RIGHT TO DISMISS STUDENTS**

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

### **RIGHT TO CHANGE RULES**

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

## **Student Services**

### **HONOR SOCIETY**

*Alpha Sigma Lambda.*—A national honor society for part-time evening college and off-campus undergraduate degree students, the purpose of which is to recognize and to encourage scholarship and leadership among undergraduate degree candidates. Membership is limited to students who have been enrolled for four semesters or terms in the College of General Studies and have completed 30 semester hours of work toward a degree with a 3.50 average. The Alpha Alpha Chapter was established at The George Washington University in 1965.

### **VETERANS EDUCATION**

The personnel of the Office of the Dean of Men act as advisers to veterans and war orphans and in a liaison capacity between the University and the Veterans Administration. This Office should be consulted concerning educational benefits before applying to the Veterans Administration for certification. The Veterans Administration is located at 1717 Massachusetts Avenue NW., Washington, D. C. 20421.

### **PUBLIC LAW 634 (WAR ORPHANS' EDUCATIONAL ASSISTANCE ACT)**

A child of a person who died of a disease or injury incurred or aggravated while on active duty in the Armed Forces during World War I, World War II, or the Korean Conflict; or a child of a person who has a total disability, permanent in nature, resulting from a service

connected disability; or a child of a person who died as a result of such a disability, may be eligible for educational assistance under this Act, if certain age requirements are met. In the case of a child who has not reached the age of majority, his guardian must make application for him to the Veterans Administration.

#### **PUBLIC LAW 550 (KOREAN GI BILL)**

Benefits under Public Law 550 terminated on January 31, 1965.

#### **PUBLIC LAWS 16, 894, AND 87-815 (VOCATIONAL REHABILITATION)**

Disabled veterans desiring vocational rehabilitation under these laws should apply to the Veterans Administration for approval of their training objectives at least sixty days prior to registration.

### **THE PLACEMENT OFFICE**

The Placement Office, 2114 G Street NW., provides a continuing service for George Washington University students and alumni in the areas of career counseling, resume preparation, and specific job referrals. A library of information about specific companies is available.

For students preparing for teaching on any level, the Placement Office will help to prepare and keep for circulation to prospective employers, complete confidential credentials folders.

The Placement Office is open from 9:00 a.m. to 5:00 p.m., Monday through Friday. For an appointment call 338-5468.

### **COUNSELING**

Students in the College of General Studies may obtain counseling and assistance in program planning in the offices of the College or from Field Representatives at the installations and agencies at which courses are held. Appointments may be made by calling the College of General Studies: Telephone 965-2350; or through the Education Director at individual installations. University counselors are also available at all installations and agencies during announced registration periods and, at scheduled times each month.

#### **PSYCHOLOGICAL CLINIC**

The George Washington University Psychological Clinic, 718 Twenty-first Street NW., offers services which are available primarily to students enrolled in the University and secondarily to high school students and to adults in the community. The latter are selected by the Clinic in accordance with training and research interests of the Clinic Staff.

The services are designed to assist individuals in the evaluation of their educational, personal, and social lives; diagnose academic difficulties and provide remedial measures such as study habits instruction and programmed instruction; and refer individuals to qualified agencies for assistance with problems not handled by the Clinic. Individual psychotherapy is available.

The Clinic also provides special assessments including: diagnostic measures prescribed by the School of Engineering and Applied Science,



admissions tests for the University and for other selected educational institutions, and some selected assessments for business and industry.

**Fees.**—For students who are currently registered as degree candidates in the University, the fee is \$10; for students currently enrolled in the University but not as degree candidates, the fee is \$40; for graduates of the University, \$40; for community clients, \$65. Fees for specialized testing are dependent upon the services involved. All fees are payable at the Office of the Clinic.

## **The Associate's Degrees**

FOUR ASSOCIATE'S CURRICULA ARE AVAILABLE: the Associate in Arts curriculum which constitutes the first two years of the Bachelor of Arts curriculum (see page 26) and three Terminal Curricula—Associate in Arts with a major in Accounting or in the field of Secretarial Studies, and Associate in Secretarial Administration.

Students who plan to continue working in this College toward the Bachelor's degree must apply to the Dean upon completion of requirements for the degree of Associate in Arts (which is optional). Forms for this purpose are available at the Office of the Registrar and the College of General Studies.

After completing the College of General Studies requirements for the degree of Associate in Arts, students may wish to transfer to one of the other schools or colleges within the University, or they may wish to transfer to another institution. However, modifications in admission, advanced standing, and curriculum requirements permitted by this College may not be accepted in transfer. Therefore, while registered in the College of General Studies, students should meet the requirements of the college or university to which they wish to transfer. The entrance requirements of Columbian College; the School of Education; and the School of Government, Business, and International Affairs are stated in the Undergraduate and Graduate Catalogue, which is available at the Office of the Director of Admissions.

### **ADVANCED STANDING**

A maximum of 30 semester hours of advanced standing toward the degree of Associate in Arts may be earned as explained in detail on page 12. In other Associate's curricula, certain coursework requirements may be met by waiver examinations (see pages 12-13).

## **REQUIREMENTS FOR THE DEGREES**

### **RESIDENCE**

At least the last 15 semester hours for the degree must be completed while registered as a degree candidate (see page 20) in the College of General Studies. The 15 semester hours taken to qualify for degree candidacy are accepted in partial satisfaction of the residence requirement, if the courses are approved as part of the student's degree program.

### SCHOLARSHIP

The system of grading and computing scholarship is described in detail on pages 16 and 17. For regulations concerning probation, suspension, and readmission, see pages 17-18.

### CURRICULUM

The satisfactory completion of 60 semester hours is required, as outlined in one of the following curricula.

### ASSOCIATE IN ARTS CURRICULUM

The following curriculum leads to the degree of Associate in Arts and constitutes the first half of the Bachelor of Arts curriculum. For the second half, see pages 29 and 30.

*Faculty Adviser:* Richard Baker Simons, Ph.D., Assistant Dean (Academic Affairs) of the College of General Studies. Room 15, Building F, 706 Twentieth Street, NW.; Telephone: 965-2350

	Semester Hours
Engl 1 or 1x, 2: English Composition . . . . .	6
Engl: 51-52, Introduction to English Literature; 71-72, Introduction to American Literature; or Phil 51-52: Introduction to Philosophy . . . . .	6
*Foreign Language: . . . . .	12
Science: Geology 3-4, Introductory Geology; or an intro- ductory course in biology or physics (if arrange- ments cannot be made to offer such courses off campus, students may take them on campus) . . . . .	6-8
Social Studies: Six hours in one department from Anthropology, Economics, History, Political Science, Sociology, or Geography 51 and 52 . . . . .	6
Elective: . . . . .	22-24
Total . . . . .	60

### TERMINAL PROGRAMS

The following two-year terminal curricula are designed for students who do not wish to extend their college education beyond two years.

#### ACCOUNTING

##### Associate in Arts with a Major in Accounting

Advanced standing is limited to 6 semester hours of electives.

*Faculty Adviser:* John Coughlan, B. Comm., Ph.D., Associate Professor of Accounting. Room 100, Hall of Government, 710 Twenty-first Street NW.; Telephone: 338-0250, Extension 243 or 610

\* A student offering for admission four acceptable high school units in one foreign language or two units in each of two foreign languages is not required to take any foreign language. (A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods of classroom work.) If he offers two units only, he must complete the entire second-year college course in the same language or the first-year college course in another language. The usual college requirement is two years of a single language, but since many College of General Studies students may subsequently be stationed abroad, some familiarity with two foreign languages may be particularly useful. Therefore students may take one year each of two different foreign languages. Those who transfer to other institutions will probably have to take two years of one language and should be guided accordingly.  
The high school units accepted under the above arrangements remove the college language requirement, but, do not count for college credit.

	Semester Hours
Acct 1-2: Introductory Accounting .....	6
Acct 101: Cost Accounting .....	3
Acct 111: Financial Statement Analysis .....	3
Acct 121-22: Intermediate Accounting .....	6
Acct 161: Income Tax Accounting .....	3
Acct 171: Auditing .....	3
Acct 181: Accounting Systems .....	3
Acct 191: Advanced Accounting .....	3
Acct 193: Business Budgeting .....	3
B Ad 131: Business Finance .....	3
B Ad 161: Commercial Law: Contracts, Sales, Agency, and Bailments .....	3
B Ad 162: Commercial Law: Negotiable Instruments, Prop- erty, Mortgages .....	3
Econ 1-2: Principles of Economics .....	6
Engl 1 or 1x, 2: English Composition .....	6
Elective: To be selected with the approval of the adviser...	6
<b>Total</b>	<b>60</b>

#### SECRETARIAL STUDIES

*Program Director:* Margaret Kiley, Ed.D., Assistant Professor of Secre-  
tarial Studies. Room 306, Monroe Hall, 2115 G Street NW.; Telephone:  
338-0250, Extension 447 or 701

#### Associate in Arts with a Field in Secretarial Studies

	Semester Hours
Acct 115: Survey of Accounting .....	3
Engl 1 or 1x, 2: English Composition .....	6
Literature: To be selected from the following .....	6
Engl 51-52: Introduction to English Literature, 6 credits	
Engl 71-72: Introduction to American Literature, 6 credits	
Engl 91-92: Introduction to European Literature, 6 credits	
Slav 91-92: Introduction to Russian Literature, 6 credits	
Slav 93-94: Introduction to Slavic (non-Russian) Literature, 6 credits	
† P E 1-2: Freshman Physical Education .....	2
† P E 11-12: Sophomore Physical Education .....	2
Se S 1: Elementary Typewriting .....	3
Se S 2: Intermediate Typewriting .....	3
Se S 11: Elementary Shorthand and Transcription .....	3
Se S 12: Intermediate Shorthand and Transcription .....	3
Se S 15: Advanced Shorthand, Typewriting, and Transcrip- tion .....	3
Se S 16: Secretarial Shorthand, Typewriting, and Transcrip- tion .....	3
Se S 51: Correspondence and Communication .....	3
Se S 54: Secretarial Practice .....	3
Social Studies: Six hours in one department from the following ..	6
Anth 1-2: Introductory Anthropology, 6 credits	
Econ 1-2: Principles of Economics, 6 credits	
Geog 51: Introduction to Geography, 3 credits	
Geog 52: World Regions, 3 credits	

\* Courses in Secretarial Studies will be offered for the last time during the academic  
year 1965-66. Arrangements will be made for students currently matriculated in the  
curricula leading to the degrees of Associate in Arts in the field of Secretarial Studies  
and Associate in Secretarial Administration to satisfy major requirements not completed  
by June 1966.

† Required of full-time on-campus students. Students exempt from P E 1-2 and 11-12  
must substitute 4 semester hours of approved electives.



	Semester Hours
Hist 39-40: The Development of European Civilization in Its World Context, 6 credits	
Hist 71-72: The Development of the Civilization of the United States, 6 credits	
P Sc 9-10: Government of the United States, 6 credits	
Soc 1-2: Introductory Sociology, 6 credits	
Speech 1: Effective Speaking or	
Speech 11: Voice and Diction	3
Elective: To be selected with the approval of the adviser	12
<b>Total</b>	<b>64</b>

#### Associate in Secretarial Administration

	Semester Hours
Acct 1-2: Introductory Accounting	6
B Ad 102: Fundamentals of Management	3
B Ad 109: Office Management	3
B Ad 161: Commercial Law: Contracts, Sales, Agency, and Bailments	3
Econ 1-2: Principles of Economics	6
Engl 1 or 1x, 2: English Composition	6
Literature: To be selected from the following	6
Engl 51-52: Introduction to English Literature, 6 credits	
Engl 71-72: Introduction to American Literature, 6 credits	
Engl 91-92: Introduction to European Literature, 6 credits	
*P E 1-2: Freshman Physical Education	2
*P E 11-12: Sophomore Physical Education	2
Psyc 1: General Psychology	3
Se S 2: Intermediate Typewriting	3
Se S 12: Intermediate Shorthand and Transcription	3
Se S 15: Advanced Shorthand, Typewriting, and Transcription	3
Se S 16: Secretarial Shorthand, Typewriting, and Transcription	3
Se S 51: Correspondence and Communication	3
Se S 54: Secretarial Practice	3
Speech 1: Effective Speaking or	
Speech 11: Voice and Diction	3
Stat 51: Introduction to Business and Economic Statistics or	
Stat 101: Basic Principles of Statistical Methods	3
<b>Total</b>	<b>64</b>

### The Bachelor's Degrees

PROGRAMS ARE OFFERED which lead to the degrees of Bachelor of Arts, Bachelor of Business Administration, and Bachelor of Science in Geodetic and Cartographic Science.

#### BACHELOR OF ARTS

Work leading to the degree of Bachelor of Arts is available (1) with a major in the General Studies Curriculum and (2) with a departmental major. Many courses required for departmental majors are available only on campus.

#### REQUIREMENTS FOR ADMISSION TO CANDIDACY

For detailed information see "Admission to Undergraduate Degree Candidacy," page 10. Students who have completed the requirements

\* See footnote (†) on page 27.

for the degree of Associate in Arts (which is optional) in this College must apply for transfer to the Bachelor's program.

A conference concerning plans for study is required of each applicant for admission to candidacy. Appointments may be made with a Field Representative or the Assistant Dean (Academic Affairs), Telephone: 965-2350.

#### ADVANCED STANDING

In addition to credit allowed in transfer from other accredited colleges or universities, see "From Higher Institutions," pages 11-12, advanced standing may be obtained by validating examinations, service schools, and correspondence courses. From any combination of these sources, the maximum credit that may be obtained is 30 semester hours. The maximum credit obtained from any one of these sources may not exceed that stated on page 12. No credit may be obtained in this way, however, if the student has been credited with the maximum of 30 semester hours toward the degree of Associate in Arts.

#### REQUIREMENTS FOR THE DEGREE

##### RESIDENCE

The last 30 semester hours, including at least 12 hours in the major field, must be completed in residence in the College, unless special permission is granted by the Dean's Council to take work elsewhere. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer work and the 15 hours taken in order to be considered for degree candidacy may be counted in residence, but in no case may the period of residence aggregate less than 30 weeks. For regulations governing military students who are transferred when they are within 6 semester hours of their degree, see page 20.

*Transfers.*—Transfer students from other universities who have partially or substantially met the major requirements are required to complete satisfactorily 12 semester hours of approved work in the major field in the College of General Studies. This work will count as part of the minimum (30 semester hours) residence requirement. (For regulations concerning transfer within the University, see page 19.)

##### SCHOLARSHIP

The system of grading and computing scholarship is described in detail on pages 16 and 17. For regulations concerning probation, suspension, and readmission, see pages 17-18.

To remain in good standing, a student must maintain a general quality-point index of 2.00 and a quality-point index of at least 2.50 in his major.

##### CURRICULUM

The satisfactory completion of 60 semester hours, as set forth in one of the following curricula, is required.

##### GENERAL STUDIES CURRICULUM

Preregistration counseling is recommended to adapt this curriculum to the student's objectives or employment responsibilities and aims. For

appointments call the College of General Studies, Telephone 965-2350.

Students planning to work toward a Master's degree in Columbian College of Arts and Sciences; the School of Government, Business, and International Affairs; or the School of Education are advised to plan their programs of study toward the Bachelor's degree so that they will meet the prerequisite requirements of the school or college of their choice.

Candidates for the degree of Bachelor of Arts registered in the General Studies Curriculum select courses, approved by the Dean or Assistant Deans, from two of the following divisions, one of which constitutes the major and the other the minor. A minimum of 30 semester hours must be in courses with departmental numbers above 100.

*Faculty Adviser:* Richard Baker Simons, Ph.D., Assistant Dean (Academic Affairs) of the College of General Studies, Room 15, Building F, 706 Twentieth Street NW.; Telephone: 965-2350

#### **The Division of Languages and Literatures**

The departments of Art, Classical Languages and Literatures, English, Germanic Languages and Literatures, Journalism, Romance Languages and Literatures, and Slavic and Oriental Languages and Literatures

#### **The Division of Mathematics and Physical Sciences**

The departments of Chemistry, Geology, Mathematics, Physics, and Statistics

#### **The Division of the Natural Sciences**

The departments of Biological Sciences, Microbiology, and Psychology

#### **The Division of the Social Sciences**

The departments of Anthropology, Economics, Education,\* Geography and Regional Science, Government and Business, History, International Affairs, Philosophy, Political Science, Religion, Sociology, and Speech and Drama

	Semester Hours
Major division: Courses are to be selected, with the approval of the adviser, from appropriate fields of study listed in the student's major division. Eighteen of the required 24 hours must be in courses with departmental numbers above 100.	24
Minor division: Courses are to be selected, with the approval of the adviser, from appropriate fields of study in the student's minor division.	12
† Elective:	24
Total	60

#### **DEPARTMENTAL MAJORS**

Students who elect a major of the type offered in Columbian College of Arts and Sciences or the School of Government, Business, and International Affairs should consult the Undergraduate and Graduate Catalogue for requirements of a given major. Any deviation from these requirements must be approved by the chairman of the department concerned and the Dean of the College of General Studies.

\* Only 12 semester hours of professional education courses may be applied towards a Bachelor of Arts degree in the College of General Studies.

† With prior permission of the Assistant Dean (Academic Affairs), up to 12 semester hours of Secretarial Studies courses may be applied as elective credit toward the Bachelor of Arts degree in the College of General Studies.



## BACHELOR OF BUSINESS ADMINISTRATION CURRICULUM

**Faculty Adviser:** George Conner, M.B.A., Assistant Professor of Business Administration, Room 310, Hall of Government, 710 Twenty-first Street NW.; Telephone: 338-0250, Extension 667

Entrance and advanced standing requirements are the same as those stated on pages 10-13. Residence and scholarship requirements for the degree are the same as those for the degree of Bachelor of Arts (see page 29).

### *Required—Freshman and Sophomore Years*

	Semester Hours
Acct 1-2: Introductory Accounting .....	6
Anth 1: Introductory Anthropology or	
Psyc 8: Psychology of Motivation and Personality or	
Soc 1: Introductory Sociology .....	3
Econ 1-2: Principles of Economics .....	6
Engl 1 or 1x, 2: English Composition .....	6
*Language or	
Literature: To be selected from the following .....	6
Chin 3-4: Second-year Chinese, 6 credits	
Engl 51-52: Introduction to English Literature, 6 credits	
Engl 71-72: Introduction to American Literature, 6 credits	
Engl 91-92: Introduction to European Literature, 6 credits	
Fren 3-4: Second-year French, 6 credits	
Fren 51-52: Survey of French Literature and Civilization,	
6 credits	
Germ 3-4: Second-year German, 6 credits	
Germ 51-52: Introduction to German Literature, 6 credits	
Ital 3-4: Second-year Italian, 6 credits	
Slav 3-4: Second-year Russian, 6 credits	
Slav 91-92: Introduction to Russian Literature, 6 credits	
Slav 93-94: Introduction to Slavic (non-Russian) Literature,	
6 credits	
Span 3-4: Second-year Spanish, 6 credits	
Span 51-52: Survey of Spanish Literature and Civilization,	
6 credits	
Math 15, 16: Finite Mathematics I, II	6
P Sc 9-10: Government of the United States	6
Psyc 1: General Psychology	3
Sciences: To be selected from the following .....	6-8
B Sc 1-2: Introductory Biology, 8 credits	
Chem 3-4: Fundamentals of Physical Science, 8 credits	
Chem 11-12: General Chemistry, 8 credits	
Geol 1-2: Introductory Geology, 6 credits	
Geol 1: Introductory Geology, 3 credits, and	
Geol 12: Rocks, Fossils, and Minerals, 3 credits	
Phys 1-2: General Physics, 8 credits	
Stat 51: Introduction to Business and Economic Statistics or	
Stat 101: Basic Principles of Statistical Methods	3
Elective: Speech is recommended, students interested in	
Foreign Commerce include Geography 52 .....	7-9
<b>Total .....</b>	<b>60</b>

\* This requirement is waived for students who offer 4 years of acceptable high school work in a single foreign language.

## In all Fields Except Foreign Commerce

### *Required—Junior and Senior Years*

	Semester Hours
Acct 193: Business Budgeting .....	3
B Ad 101: Introduction to Business .....	3
B Ad 102: Fundamentals of Management .....	3
B Ad 105: Personnel Management .....	3
B Ad 131: Business Finance .....	3
B Ad 141: Basic Marketing Management .....	3
B Ad 161: Commercial Law: Contracts, Sales, Agency, and Bailments .....	3
B Ad 162: Commercial Law: Negotiable Instruments, Prop- erty, Mortgages .....	3
B Ad 198: Case Problems in Management .....	3
Econ 121: Money and Banking .....	3
Group Option: To be selected from one of the following groups .....	15
Elective: To be selected in consultation with the adviser .....	15
<b>Total</b> .....	<b>60</b>

### Group Options

Nine areas of specialization are open to Business Administration majors. The 15 hours taken in each of these options require the approval of the adviser. The group option and the individual courses within the option should be selected *no later than the beginning of the second semester of the junior year.*

#### GROUP I: GENERAL BUSINESS

The following courses provide the basic academic foundation for general administrative and supervisory positions.

Acct 101: Cost Accounting, 3 credits
Acct 121-22: Intermediate Accounting, 6 credits
B Ad 107: Labor-Management Contracts, 3 credits
B Ad 109: Office Management, 3 credits
B Ad 113: Real Estate, 3 credits
B Ad 118: Introduction to Data Processing, 3 credits
B Ad 119: Data Processing Programming, 3 credits
B Ad 121: Property and Casualty Insurance, 3 credits
B Ad 122: Life Insurance and Estate Planning, 3 credits
B Ad 136: Credit Management, 3 credits
B Ad 138: Investments, 3 credits
B Ad 143: Marketing Research, 3 credits
B Ad 145: Sales Management, 3 credits
B Ad 150: Procurement and Materials Management, 3 credits
B Ad 171: Principles of Transportation, 3 credits
B Ad 181: Manufacturing Production, 3 credits
B Ad 191: Business Reports and Analyses, 3 credits
Econ 101: Economic Analysis, 3 credits
Econ 105: Business Cycles, 3 credits
Econ 165: Government Control of Economic Activity, 3 credits
Geog 125: Transportation Complexes, 3 credits
Spee 121: Group Discussion and Conference Leadership, 3 credits

#### GROUP II: PERSONNEL MANAGEMENT

The following courses provide the basic academic foundation for such positions as personnel manager, employee relations manager, and employment manager in business and government service.

- B Ad 106: Problems in Personnel Management, 3 credits
- B Ad 107: Labor-Management Contracts, 3 credits
- B Ad 118: Introduction to Data Processing, 3 credits
- B Ad 119: Data Processing Programming, 3 credits
- B Ad 181: Manufacturing Production, 3 credits
- B Ad 191: Business Reports and Analyses, 3 credits
- B Ad 193: Management Communication, 3 credits
- B Ad 195: Controllershship, 3 credits
- Jour 145: Principles and Problems of Public Relations, 3 credits
- Psyc 129: Motivational Factors in Personality, 3 credits
- Psyc 131: Psychological Tests, 3 credits
- Psyc 144: Personnel and Industrial Psychology, 3 credits
- Spee 121: Group Discussion and Conference Leadership, 3 credits

#### GROUP III: FINANCE

The following courses provide the basic academic foundation for such positions as credit analyst, supervisor in a financial institution, bond cashier, trust officer, bank examiner, and similar positions in federal or international financial institutions.

- Acct 111: Financial Statement Analysis, 3 credits
- Acct 121-22: Intermediate Accounting, 6 credits
- B Ad 113: Real Estate, 3 credits
- B Ad 118: Introduction to Data Processing, 3 credits
- B Ad 119: Data Processing Programming, 3 credits
- B Ad 121: Property and Casualty Insurance, 3 credits
- B Ad 136: Credit Management, 3 credits
- B Ad 138: Investments, 3 credits
- B Ad 163: Law in Relation to the Form of Business Units, 3 credits
- B Ad 181: Manufacturing Production, 3 credits
- Econ 101: Economic Analysis, 3 credits
- Econ 105: Business Cycles, 3 credits
- Econ 123: Monetary Theory and Policy, 3 credits

#### GROUP IV: MARKETING

The following courses provide the basic academic foundation for such positions as sales manager, circulation manager, route superintendent, product development manager, buyer, promotion manager, and purchasing agent.

- B Ad 118: Introduction to Data Processing, 3 credits
- B Ad 119: Data Processing Programming, 3 credits
- B Ad 136: Credit Management, 3 credits
- B Ad 142: Marketing Management Problems, 3 credits
- B Ad 143: Marketing Research, 3 credits
- B Ad 145: Sales Management, 3 credits
- B Ad 147: Advertising, 3 credits
- B Ad 150: Procurement and Materials Management, 3 credits
- B Ad 158: Traffic Management, 3 credits
- B Ad 171: Principles of Transportation, 3 credits
- B Ad 175: Introduction to Foreign Trade, 3 credits
- B Ad 176: Exporting and Importing, 3 credits
- B Ad 178: Management of International Business Operations, 3 credits
- B Ad 181: Manufacturing Production, 3 credits
- B Ad 191: Business Reports and Analyses, 3 credits
- B Ad 195: Controllershship, 3 credits
- Econ 101: Economic Analysis, 3 credits
- Econ 105: Business Cycles, 3 credits
- Jour 145: Principles and Problems of Public Relations, 3 credits
- Stat 111-12: Business and Economic Statistics I-II, 6 credits



#### GROUP V: CONTROLLERSHIP

The following courses provide the basic academic foundation for the position of controller in business and government service.

- Acct 101: Cost Accounting, 3 credits
- Acct 111: Financial Statement Analysis, 3 credits
- Acct 121-22: Intermediate Accounting, 6 credits
- Acct 181: Accounting Systems, 3 credits
- Acct 191: Advanced Accounting, 3 credits
- B Ad 109: Office Management, 3 credits
- B Ad 113: Real Estate, 3 credits
- B Ad 118: Introduction to Data Processing, 3 credits
- B Ad 119: Data Processing Programming, 3 credits
- B Ad 121: Property and Casualty Insurance, 3 credits
- B Ad 163: Law in Relation to the Form of Business Units, 3 credits
- B Ad 171: Principles of Transportation, 3 credits
- B Ad 191: Business Reports and Analyses, 3 credits
- B Ad 195: Controllership, 3 credits
- Econ 105: Business Cycles, 3 credits
- Econ 165: Government Control of Economic Activity, 3 credits
- Stat 111-12: Business and Economic Statistics I-II, 6 credits

#### GROUP VI: ECONOMICS

The following courses provide the basic academic foundation for such positions as financial economic analyst, industrial economic analyst, and market research analyst in business and government.

- B Ad 118: Introduction to Data Processing, 3 credits
- B Ad 119: Data Processing Programming, 3 credits
- B Ad 171: Principles of Transportation, 3 credits
- B Ad 172: Public Utilities, 3 credits
- Econ 101-2: Economic Analysis, 6 credits
- Econ 105: Business Cycles, 3 credits
- Econ 141: Unionism and Collective Bargaining, 3 credits
- Econ 161-62: Public Finance and Taxation, 6 credits
- Econ 165: Government Control of Economic Activity, 3 credits
- Econ 181-82: International Economics, 6 credits
- Geog 125: Transportation Complexes, 3 credits
- Stat 111-12: Business and Economic Statistics I-II, 6 credits

#### GROUP VII: STATISTICS

The following courses provide the basic academic foundation for such positions as financial statistician, planning statistician, industrial statistician, and rate analyst in business and government.

- B Ad 118: Introduction to Data Processing, 3 credits
- B Ad 119: Data Processing Programming, 3 credits
- Stat 91: Principles of Statistical Methods, 3 credits
- Stat 110: Quality Control Techniques, 3 credits
- Stat 111-12: Business and Economic Statistics I-II, 6 credits
- Stat 117: Analysis of Variance, 3 credits
- Stat 118: Correlation and the Chi-square Test, 3 credits
- Stat 155: Introduction to Mathematical Probability, 3 credits
- Stat 157-58: Mathematical Statistics, 6 credits

#### GROUP VIII: TRANSPORTATION AND TRAFFIC MANAGEMENT

The following courses provide the basic academic foundation for management positions in transportation firms and in the traffic departments of other types of business firms and government agencies. The program should

also aid in the preparation for the examinations for membership in the American Society of Traffic and Transportation.

- B Ad 118: Introduction to Data Processing, 3 credits
- B Ad 119: Data Processing Programming, 3 credits
- B Ad 158: Traffic Management, 3 credits
- B Ad 171: Principles of Transportation, 3 credits
- B Ad 172: Public Utilities, 3 credits
- B Ad 173: Commercial Motor Transportation, 3 credits
- B Ad 174: Commercial Air Transportation, 3 credits
- B Ad 175: Introduction to Foreign Trade, 3 credits
- Econ 101: Economic Analysis, 3 credits
- Geog 125: Transportation Complexes, 3 credits
- Geog 141-42: Urban Settlement, 6 credits
- Hist 179-80: Economic History of the United States, 6 credits
- Stat 111: Business and Economic Statistics I, 3 credits

#### GROUP IX: AUTOMATIC DATA PROCESSING

The following courses provide the basic academic foundation for positions in data processing in government, business, and industry. They also give the student an understanding of the manager's use of data processing as a vital managerial technique.

- B Ad 118: Introduction to Data Processing, 3 credits
- B Ad 119: Data Processing Programming, 3 credits
- B Ad 120: Data Processing Systems, 3 credits
- Stat 111-12: Business and Economic Statistics I-II, 6 credits

#### Program in Foreign Commerce

This program is designed to provide the basic academic foundation for positions in foreign commerce, both in private industry and in government. It consists of 30 semester hours of *required* course work and 30 hours of electives. Any modification of the program must be made with the consent of the adviser.

##### *Required—Junior and Senior Years*

	Semester Hours
B Ad 102: Fundamentals of Management .....	3
B Ad 131: Business Finance .....	3
B Ad 141: Basic Marketing Management .....	3
B Ad 161: Commercial Law: Contracts, Sales, Agency, and Bailments .....	3
B Ad 175: Introduction to Foreign Trade .....	3
B Ad 176: Exporting and Importing .....	3
B Ad 177: Foreign Markets .....	3
B Ad 178: Management of International Business Opera- tions .....	3
Econ 101: Economic Analysis .....	3
Econ 121: Money and Banking .....	3
Elective: To be selected from the following in consultation with the adviser .....	30
<b>Total</b> .....	<b>60</b>

#### ELECTIVES: FOREIGN COMMERCE PROGRAM

The 30 hours of elective courses are to be selected from the following, in consultation with the adviser.

- Acct 193: Business Budgeting, 3 credits
- B Ad 142: Marketing Management Problems, 3 credits

- B Ad 143: Marketing Research, 3 credits
- B Ad 158: Traffic Management, 3 credits
- B Ad 162: Commercial Law: Negotiable Instruments, Property, Mortgages, 3 credits
- B Ad 171: Principles of Transportation, 3 credits
- B Ad 173: Commercial Motor Transportation, 3 credits
- B Ad 174: Commercial Air Transportation, 3 credits
- B Ad 191: Business Reports and Analyses, 3 credits
- B Ad 193: Management Communication, 3 credits
- B Ad 195: Controllership, 3 credits
- Econ 181-82: International Economics, 6 credits
- Geog 126: World Economies, 3 credits
- Geog 153-166: Regional survey courses, 3 credits each
- P Sc 167: Foreign Policy of the United States, 3 credits
- P Sc 181-82: Survey of International Law and Organization, 6 credits
- Stat 111-12: Business and Economic Statistics I-II, 6 credits

## BACHELOR OF SCIENCE IN GEODETIC AND CARTOGRAPHIC SCIENCE

The College of General Studies offers a four-year curriculum designed to prepare students for the degree of Bachelor of Science in Geodetic and Cartographic Science. Only a portion of the course work in this four-year curriculum is offered on campus. The Geodetic and Cartographic Science courses are given at the Army Map Service and the Naval Oceanographic Office, which have the necessary laboratory facilities. Since these installations are some distance from the campus, students should plan to provide their own transportation.

### ENTRANCE REQUIREMENTS

The entrance requirements are the same as those stated on pages 10-13, with the exceptions noted below under "Advanced Standing."

### ADVANCED STANDING

Thirty semester hours of credit may be granted upon the successful completion of validating examinations. No credit will be given for correspondence schools or service schools.

### REQUIREMENTS FOR THE DEGREE

The residence and scholarship requirements for the degree of Bachelor of Science in Geodetic and Cartographic Science are the same as those stated on page 29, for the degree of Bachelor of Arts.

### Curriculum

*Faculty Adviser:* Rolland Hardy, Ph.D., Associate Professorial Lecturer in Geodetic and Cartographic Science, Room 202, Building I, 2135 G Street NW.; Telephone: 338-0250, Extension 287 or 298

	Semester Hours
Chem 11-12: General Chemistry .....	8
Engl 1 or 1x, 2: English Composition .....	6
G&CS 1: Map Reading and Photointerpretation .....	3



	Semester Hours
G&CS 11: Elementary Cartography	2
G&CS 12: Plane Surveying	3
G&CS 13: Higher Surveying	3
G&CS 17-18: Elementary Photogrammetry	6
G&CS 110: Map Projections	2
G&CS 111: Cartographic Techniques and Map Reproduction	2
G&CS 155: Elementary Geodesy	3
G&CS 156: Geodetic Astronomy	3
G&CS 160: Theory of Errors and Geodetic Adjustments	3
G&CS 197-98: Proseminar in Geodesy, Photogrammetry, and Cartography	6
Geog 51: Introduction to Geography	3
Geog 52: World Regions	3
Geog 115-16: Physical Geography	6
Geog 124: Land Capabilities	3
Geog 125: Transportation Complexes	3
Geol 105-6: Fundamentals of Geophysics	6
Math 21: Calculus I	3
Math 22: Calculus II	3
Math 23: Calculus III	3
Math 24: Calculus IV	3
Math 111: Mathematics for Engineers and Physicists I	3
Math 112: Mathematics for Engineers and Physicists II	3
Ocea 101-2: Introductory Oceanography	6
Phys 1-2: General Physics	8
Phys 51-52: Introduction to Experimental Physics	4
Social Studies: Any one of the following two-semester courses	6
Anth 1-2: Introductory Anthropology, 6 credits	
Econ 1-2: Principles of Economics, 6 credits	
Hist 39-40: The Development of European Civilization in Its World Context, 6 credits	
Hist 71-72: The Development of the Civilization of the United States, 6 credits	
P Sc 9-10: Government of the United States, 6 credits	
Soc 1-2: Introductory Sociology, 6 credits	
Elective:	14
Total	130

## The Master's Degrees

SIX MASTER'S DEGREE CURRICULA are offered off campus: Master of Science in Business Administration, Master of Science in Financial Management, Master of Science in Governmental Administration, Master of Science in International Affairs, Master of Science in Personnel Administration, and Master of Science in Public Administration. These programs are available at various centers, as indicated in the program descriptions that follow and in the section on Off-Campus Centers, pages 55-73.

The curricula provide the opportunity for a mid-career Master's education to qualified students who for geographic or other reasons cannot come to the campus. The University's standards for graduate work are maintained in the off-campus courses, and degree candidates must take the comprehensive examinations required of campus students

in the same curricula.\* Any substitution of courses requires prior approval from the appropriate faculty adviser.

#### COUNSELING SERVICE

An advisory service is available to all Master's candidates. The field representatives of the University provide administrative counseling; all academic problems are referred to the appropriate faculty adviser.

### REQUIREMENTS FOR ADMISSION TO MASTER'S CANDIDACY

Application for Master's candidacy may be made before starting coursework or during the first semester of enrollment. No more than 6 semester hours of credit toward the degree will be granted for work taken in nondegree status (before application and while the application is being processed).

The general requirement for Master's candidacy is a Bachelor's degree from a regionally accredited college or university,† with an over-all quality-point index of 3.00 (a *B* average) and adequate undergraduate preparation for the chosen graduate field. However, because of the maturity and work experience of Master's candidates in the College of General Studies, students with below *B* undergraduate averages may qualify by satisfactory performance on the Scholastic Aptitude Test portion of the Graduate Record Examination.‡ And students who lack the necessary undergraduate background for the chosen graduate field may qualify by earning a *B* average in prescribed undergraduate courses.

If the Scholastic Aptitude Test or the Admission Test for Graduate Study in Business is required, it must be taken prior to application for degree candidacy or during the semester in which application is made. For information concerning the date and place for taking the tests, consult the appropriate field representative or call 965-2350.

#### ADVANCED STANDING §

A maximum of 6 semester hours of advanced standing may be credited toward the degree by transfer of credit for approved graduate work taken at an accredited college or university.

### REQUIREMENTS FOR THE DEGREES

#### RESIDENCE

A minimum of 24 semester hours of graduate work must be completed while registered as a degree candidate in the College of General Studies.

\* The curriculum of Master of Science in International Affairs offered at the War Colleges is not offered on campus.

† This general requirement, without further qualification, satisfies the admission requirements to Master's candidacy in the War Colleges.

‡ Applicants for Master of Science in Business Administration candidacy substitute the Admission Test for Graduate Study in Business administered by the Educational Testing Service.

§ Not applicable to candidates for the degrees of Master of Science in Business Administration, Master of Science in International Affairs, or Master of Science in Public Administration in the War Colleges' program.

The thesis and thesis seminar (6 semester hours) may be included in the 24 hours of course work taken in residence. A graduate student who transfers from another division of the University is required to have a minimum of 12 hours of course work as a degree candidate in the College of General Studies.

#### SCHOLARSHIP

An average of *B* or better is required for the Master's degree. For details, see page 16. A student whose scholarship is unsatisfactory may be suspended by the Dean upon recommendation of the Committee on Scholarship.

#### THESIS

Theses are required of candidates for the degrees of Master of Science in Business Administration, Master of Science in International Affairs, and Master of Science in Public Administration.

With the approval of the adviser, a thesis may be substituted for 6 semester hours of elective credit toward the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration. (see page 21.)

The thesis subject must be approved by the director of the thesis and the faculty adviser and presented to the Dean no later than the date announced in the calendar.

The thesis in its final form must be approved by the director of the thesis and the faculty adviser and presented to the Dean no later than the date announced in the calendar. Printed copies of detailed regulations regarding the form and reproduction of the thesis are available in the Office of the Assistant Dean (Administration) or the Director, War Colleges Program.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished an additional successive academic year may be granted without further tuition payment. The student must, however, maintain continuous registration during this period. If the preparation of the thesis extends beyond the two-year period the student must register for the entire 6 hours of thesis again and pay tuition as for a repeated course.

#### COURSE SUBSTITUTION

It is the responsibility of the student to get written approval from the faculty adviser and the Dean prior to registration for any course substitution. Forms for requesting substitution are available at the College of General Studies.

#### COMPREHENSIVE EXAMINATIONS

The Master's candidate is required to pass a written Comprehensive Examination. The examinations are conducted at the University in December for students graduating in February, in April for students



graduating in June, and in July for students who are completing degree requirements in the summer sessions. Dates for the Comprehensive Examinations are announced in the *Off-Campus Schedule of Classes*. Comprehensive Examination dates for the off-campus centers at Carlisle, Pa.; Maxwell Air Force Base, Ala.; and Newport, R.I., will be announced by the Directors of the respective Centers. At the time of the examination a candidate may be required to submit to the examination committee copies of articles published, pertinent staff studies, reports, etc., prepared during the period of graduate study, as additional evidence of Master's competency.

### THE DEGREE OF MASTER OF SCIENCE IN BUSINESS ADMINISTRATION

These programs are offered in cooperation with the Industrial College of the Armed Forces, Fort McNair, Washington, D.C.; the Command and Staff College, Air University, Maxwell Air Force Base, Alabama; and at Fort Belvoir, Virginia.

#### PREREQUISITE

An approved Bachelor's degree from an accredited college or university.

#### INDUSTRIAL COLLEGE OF THE ARMED FORCES

*Faculty Adviser:* James Carlton Dockeray, Ph.D., Professor of Finance, Room 201, Hall of Government, 710 Twenty-first Street NW.; Telephone: 338-0250, Extension 512 or 539

Open only to current students and faculty and to graduates of the classes of 1959 through 1960 of the Industrial College of the Armed Forces.

#### Required Courses

	Semester Hours
B Ad 235: Financial Management .....	2
B Ad 241: Advanced Marketing Management .....	2
B Ad 297: Case Studies in Business Administration .....	2
B Ad 299: Thesis Seminar .....	3
B Ad 300: Thesis .....	3
B&PA 201: Advanced Administrative Management .....	2
B&PA 204: Quantitative Factors in Administration .....	3
B&PA 207: Human Factors in Administration .....	3
*B&PA 280-81-82: Managerial Aspects of National Security .....	7
Econ 217: Survey of Economics .....	3
Total .....	30

#### Elective Courses

A student whose previous academic preparation makes it unnecessary for him to take all of the prescribed courses in this program may substitute elective courses with the written approval of the faculty adviser.

\* Industrial College of the Armed Forces curriculum only.

## AIR UNIVERSITY

*Faculty Adviser:* Paul Bentley Jones, M.B.A., Assistant Professor of Business Administration, Room 9, Building 823, Maxwell Air Force Base, Alabama; Telephone: 265-5621, Extension 7881

Open only to current students and faculty of the Command and Staff College

### Required Courses

	Semester Hours
Acct 215: Survey of Managerial Accounting.....	2
B Ad 235: Financial Management .....	2
B Ad 241: Advanced Marketing Management .....	2
B Ad 297: Case Studies in Business Administration.....	2
B Ad 299: Thesis Seminar .....	3
B Ad 300: Thesis .....	3
B&PA 201: Advanced Administrative Management.....	2
B&PA 207: Human Factors in Administration.....	2
*B&PA 280-81: Managerial Aspects of National Security.....	8
Econ 217: Survey of Economics.....	2
Stat 101: Basic Principles of Statistical Methods.....	2
Total .....	30

### Elective Courses

A student whose previous academic preparation makes it unnecessary for him to take all of the prescribed courses in this program may substitute elective courses with the written approval of the faculty adviser.

## FORT BELVOIR

*Faculty Adviser:* George Frederick Conner, M.B.A., Assistant Professor of Business Administration, Room 310, Hall of Government, 710 Twenty-first Street NW.; Telephone: 338-0250, Extension 667

Open only to military and civilian employees of the Army and to other government employees, by permission of the Commanding Officer of Fort Belvoir and the Chairman of the Department of Government and Business.

### Prerequisite

A student must meet the general requirements for admission to degree candidacy as listed on page 38. In addition, he must have 9 hours of mathematics; one course each in Accounting, Business and Public Administration, and Statistics; and two courses in Economics.

### Required Courses

B Ad 299: Thesis Seminar .....	3
B Ad 300: Thesis .....	3
B&PA 201: Advanced Administrative Management.....	3
B&PA 204: Quantitative Factors in Administration.....	3
B&PA 207: Human Factors in Administration.....	3
(A): Area of concentration.....	9
(B) Elective: .....	6
Total .....	30

\* Command and Staff College, Air University curriculum only.

### \* A. Area of Concentration

Students must complete one of the three following areas of concentration:

- (1) B Ad 218: Survey of Data Processing, 3 credits  
B Ad 227: Linear Programming, 3 credits  
B Ad 228: Introduction to Operations Research for Management, 3 credits
- (2) B Ad 219: Digital Computer Programming Concepts, 3 credits  
B Ad 220: Comparative Digital Computer Systems and their Management, 3 credits  
B Ad 221: Management Information Systems Development and Application, 3 credits
- (3) B Ad 218: Survey of Data Processing, 3 credits  
B Ad 228: Introduction to Operations Research for Management, 3 credits  
B&PA 268: Management Engineering, 3 credits

### \* B. Elective

In choosing electives, the student should bear in mind that he must pass a written Comprehensive Examination in three fields—only two of which are covered in the required courses and area of concentration. Depending on previous preparation, background, and interest, he should select 6 semester hours of courses primarily but not exclusively from the following:

- Acct 215: Survey of Managerial Accounting, 3 credits
- Acct 293: Budget Preparation and Administration, 3 credits
- B Ad 209: Seminar: Personnel Management, 3 credits
- B Ad 241: Advanced Marketing Management, 3 credits
- B Ad 242: Seminar: Marketing Theory, 3 credits
- B Ad 297: Case Studies in Business Administration, 3 credits
- B&PA 206: Personnel Management, 3 credits
- B&PA 208: Current Issues in Organizational Behavior, 3 credits
- Econ 217-18: Survey of Economics, 6 credits
- P Ad 213: Administration in Government, 3 credits
- Stat 110: Quality Control Techniques, 3 credits
- Stat 207: Operations Analysis, 3 credits
- Stat 271-72: Statistical Information Theory, 6 credits

## MASTER OF SCIENCE IN FINANCIAL MANAGEMENT

*Faculty Adviser:* Karl Ernest Stromsem, Ph.D., Professor of Public Administration, Room 206, Hall of Government, 710 Twenty-first Street NW.; Telephone: 338-0250, Extension 493 or 242

### Required Courses

The student must complete course work as approved by the Faculty Adviser from the following courses:

	Semester Hours
Acct 211-12: Managerial Accounting	6
B Ad 296: Seminar: Financial Management	3
B&PA 201: Advanced Administrative Management	3
B&PA 207: Human Factors in Administration	3
B&PA 268: Management Engineering	3
P Ad 213: Administration in Government	3
P Ad 251: Governmental Budgeting	3

\* The area of concentration and all electives must be approved by the faculty adviser



	Semester Hours
P Ad 252: Seminar: Planning and Programming.....	3
Stat 101: Basic Principles of Statistical Methods or	
B&PA 204: Quantitative Factors in Administration.....	3

#### Plan I

	Required courses, 24 credits
B Ad 299:	Thesis Seminar, 3 credits
B Ad 300:	Seminar, 3 credits

Total, 30 credits

#### Plan II

	Required courses, 30 credits
B&PA 295:	Research Methods, 3 credits

Total, 33 credits

### Elective Courses

A student whose previous background makes it unnecessary for him to take all of the prescribed courses in this program may substitute elective courses, with the written approval of his faculty adviser. A form for this purpose is available at the College of General Studies. Electives may be selected from courses listed under the Personnel Administration Master's program on pages 45-46. In exceptional cases, the faculty adviser may approve other courses as electives.

## MASTER OF SCIENCE IN GOVERNMENTAL ADMINISTRATION

*Faculty Adviser:* Harry Robert Page, M.B.A., Assistant Professor of Business Administration, Room 201, Hall of Government, 710 Twenty-first Street NW.; Telephone: 338-0250, Extension 507

### Required Courses

B&PA 201: Advanced Administrative Management	3
B&PA 206: Personnel Management	3
B&PA 207: Human Factors in Administration	3
B&PA 268: Management Engineering	3
P Ad 213: Administration in Government	3
P Ad 251: Governmental Budgeting	3
P Ad 252: Seminar: Planning and Programming	3
P Ad 298: Case Studies in Public Administration	3

#### Plan I

	Required courses, 24 credits
B Ad 299:	Thesis Seminar, 3 credits
B Ad 300:	Thesis, 3 credits

Total, 30 credits

#### Plan II

	Required courses, 24 credits
B&PA 295:	Research Methods, 3 credits
Elective:	6 credits

Total, 30 credits

### Elective Courses

A student whose previous academic preparation makes it unnecessary for him to take all of the prescribed courses in this program may substitute elective courses, with the written approval of the faculty adviser. A form for this purpose is available at the College of General Studies. Electives may be selected from courses listed under the Personnel Administration Master's program on pages 45-46. In exceptional cases, the faculty adviser may approve other courses as electives.

### THE DEGREE OF MASTER OF SCIENCE IN INTERNATIONAL AFFAIRS

*Faculty Adviser:* Charles Edward Galbreath, Ph.D., Professor of International Economics, Room 36, Building F, 706 Twentieth Street NW.; Telephone 965-2350

This is a special degree program offered in cooperation with the Air War College, Air University, Maxwell Air Force Base, Alabama; the Army War College, Carlisle Barracks, Pennsylvania; the National War College, Fort McNair, Washington, D. C.; and the Naval War College, Newport, Rhode Island. It is open only to current students and faculty and to graduates eligible under the contractual arrangements.

#### Prerequisite

An approved Bachelor's degree from an accredited college or university.

	Semester Hours
*I Af 260: Fundamentals of National Power	3
*I Af 261: International and United States Foreign Policy	3
*I Af 262: National Security Policy of the United States	3
*I Af 299-300: Thesis	6
Elective: From the following or related courses as approved by the faculty adviser	15
+Anth 263: Culture Contact and Change, 3 or 4 credits	
†Econ 251: Economic Development, 3 or 4 credits	
+Hist 246: Seminar: Russian History, 3 or 4 credits	
*I Af 297: Readings in International Affairs, 1, 2, or 3 credits	
+P Sc 172: Organization and Function of the United Nations, 3 or 4 credits	
+P Sc 212: Seminar: Comparative Government and Politics, 3 or 4 credits	
†P Sc 283: Topics in International Law, 3 or 4 credits	
†P Sc 285: Diplomacy since World War II, 3 or 4 credits	
Total	30

### MASTER OF SCIENCE IN PERSONNEL ADMINISTRATION

*Faculty Adviser:* Joe Lee Jessup, M.B.A., Professor of Business Administration, Room 312, Hall of Government, 710 Twenty-first Street NW.; Telephone: 338-0250, Extension 543

\* War Colleges curricula only.

† Four semester hours of credit allowed only for degree candidates in the Master of Science in International Affairs curricula in the War Colleges.

## Required Courses

The student must complete at least one course in each of the five major areas:

	Semester Hours
<b>Personnel Principles</b>	
B Ad 209: Seminar: Personnel Management .....	3
B&PA 206: Personnel Management .....	3
<b>Human Relations and Motivation</b>	
B&PA 207: Human Factors in Administration .....	3
Psyc 245: Seminar: Organizational Behavior .....	3
<b>Labor Relations</b>	
Econ 241: Unionism, Collective Bargaining, and Labor Economics .....	3
Econ 244: Problems in Unionism, Collective Bargaining, and Labor Economics .....	3
<b>Management</b>	
B&PA 201: Advanced Administrative Management .....	3
<b>Quantitative Methods</b>	
B&PA 204: Quantitative Factors in Administration .....	3
Stat 101: Basic Principles of Statistical Methods .....	3

### Plan I

Required courses, 15 credits

Elective: 9 credits

Thesis: B Ad 299-300, P Ad 299-300, or Psyc 299-300, 6 credits

Total, 30 credits

### Plan II

Required courses, 15 credits

Elective: 15 credits

B&PA 295: Research Methods, 3 credits

Total, 33 credits

## Elective Courses

A student whose previous background makes it unnecessary for him to take all of the prescribed courses in this program may substitute elective courses with the written approval of the faculty adviser. A form for this purpose is available at the College of General Studies. Electives may be selected from courses listed below. In exceptional cases, the faculty adviser may approve other related courses as electives.

B Ad 210: The Personnel Manager .....	3
B Ad 218: Survey of Data Processing .....	3
B Ad 288: Executive Leadership .....	3
B Ad 291: Seminar: Business Management .....	3
B Ad 297: Case Studies in Business Administration .....	3
B&PA 205: Seminar: Communication and Executive Action .....	3
B&PA 268: Management Engineering .....	3
B&PA 287: Relation of Government to Business .....	3
Econ 246: Foreign Labor Movements .....	3
Educ 257: Occupational and Educational Information .....	3



	Semester Hours
Educ 258: Techniques of Counseling	3
Educ 263: Employee Training	3
P Ad 213: Administration in Government	3
P Ad 221: Management in the Executive Branch	3
P Ad 232: Federal Personnel Procedures	3
P Ad 233: Seminar: Manpower Development and Utilization	3
P Ad 251: Governmental Budgeting	3
P Ad 261: The Public and the Administrator	3
P Ad 272: Seminar: Public Personnel Administration	3
P Ad 298: Case Studies in Public Administration	3
Psyc 131: Psychological Tests	3
Psyc 144: Personnel and Industrial Psychology	3
Psyc 209: Seminar: Psychology of Motivation	3
Psyc 231: Development of Psychometric Instruments	3
Psyc 246: Seminar: Personnel Measurement Techniques	3
Psyc 254: Seminar: Experimental Social Psychology	3
Psyc 255: Seminar: Techniques of Opinion and Attitude Measurements	3
Stat 102: Basic Principles of Statistical Methods	3
Stat 104: Statistics in Psychology and Education	3

## THE DEGREE OF MASTER OF SCIENCE IN PUBLIC ADMINISTRATION

### AIR UNIVERSITY

*Faculty Adviser:* Lowell Cyrus Smith, M.B.A., Assistant Professor Business and Public Administration, Room 9, Building 823, Maxwell Air Force Base, Alabama; Telephone: 265-5621, Extension 7881

This is a special degree program offered in cooperation with the Command and Staff College, Air University, Maxwell Air Force Base, Alabama. It is open only to current students and faculty of the Command and Staff College.

### Prerequisite

A Bachelor's degree from an accredited college or university.

### Required Courses

Acct 215: Survey of Managerial Accounting	2
B&PA 201: Advanced Administrative Management	2
B&PA 207: Human Factors in Administration	2
*B&PA 280-81: Managerial Aspects of National Security	8
P Ad 213: Administration in Government	2
P Ad 251: Governmental Budgeting	2
P Ad 252: Seminar: Planning and Programming	2
P Ad 298: Case Studies in Public Administration	2
P Ad 299: Thesis Seminar	3
P Ad 300: Thesis	3
Stat 101: Basic Principles of Statistical Methods	2
<b>Total</b>	<b>30</b>

\* Command and Staff College, Air University curriculum only.

### Elective Courses

A student whose previous academic preparation makes it unnecessary for him to take all of the prescribed courses in this program may substitute elective courses with the written approval of the faculty adviser.

### Conferences, Seminars, and Special Projects

THE COLLEGE OF GENERAL STUDIES annually offers a variety of conferences and seminars, many of which are held at Airlie House, situated near Warrenton, Virginia.

Among these is a series of informal seminars for students and leaders from other countries visiting the United States under the Department of State educational and cultural exchange program. Each seminar is specifically planned to give the participants opportunities to (1) discuss with American experts in the various areas their observations and experiences in the United States, (2) clear up any misconceptions they may have about this country, and (3) stimulate the exchange of knowledge and create greater understanding between our nations.

A Forum for International Medical Scholars is held each year in cooperation with the School of Medicine for foreign doctors working in American hospitals under the auspices of the Department of Health, Education, and Welfare; other overseas students have attended a Conference on Higher Education for Fulbright Scholars. In cooperation with the International Study Center, a series of Andean Seminars has been inaugurated for Latin American students of the social sciences. Two of the groups have met in Washington and a third in Peru.

Seminars and workshops are planned to meet the particular needs of professional and business groups. Included among these are the annual Administrative Leadership Laboratory, offered in conjunction with the Center for the Behavioral Sciences, and a semester of seminars for the teachers of Fauquier and adjacent counties in Virginia. Additional special projects implemented by the College of General Studies are courses on Administration and Economics of Natural Resources for the Department of the Interior's Departmental Manager Development Program, and an annual short course on Space Power Systems for interested industries.

Conferences have also been held in cooperation with the U.S. Office of Education on such topics as Planning for Classics and the Present Status of Educational Research Activities.

For further information consult Robert Carter Burns, A.M., Staff Associate (Conference Seminars), College of General Studies, 706 Twentieth Street NW.; Telephone: 965-2350.

## Continuing Education and Noncredit Programs

IN RECOGNITION of the impact of the increasing complexity and specialization of modern life, the College of General Studies sponsors credit and noncredit courses, institutes, lectures, and programs designed to encourage continuing education for all throughout life.

Courses in the liberal arts are offered to widen the horizons of those who have been forced to specialize to meet the requirements of technical professions. Refresher courses and seminars are offered to help specialists keep abreast of rapid advancement of knowledge and to facilitate the return of women to academic life. Courses on writing, speaking, and modern languages provide opportunities for increasing skill in self-expression. Programs to develop leadership are planned in cooperation with organizations.

A regular program of noncredit courses without entrance requirements is offered each semester by the College. However, informal off-campus and on-campus programs and courses of any desired length may be initiated at any time at the request of an interested group.

Information about entering or initiating courses in continuing education may be obtained by consulting Olive Jean McKay, A.M., Ed.D., or Jessie Edith Mullins, A.M., Staff Associates (Continuing Education), College of General Studies; Telephone: 965-2350.

Among the courses offered by the College of General Studies, are the following. Unless otherwise specified, all courses are noncredit.

### COURSES DESIGNED TO INCREASE PERSONAL COMPETENCE IN EVERYDAY LIVING

#### PSYCHOLOGY APPLIED TO EVERYDAY LIVING

A course designed for the man or woman seeking a better understanding of himself and others with whom he lives and works. The purpose is to show him how to apply the insights of modern psychology to his everyday life at home and on the job, as well as in his relations with his friends and fellow citizens. Topics covered are the role of psychology in modern life, why people are different, how to learn effectively, understanding personality difficulties, how personality develops, motivating others, utilizing aptitudes and abilities, and planning a successful career.

#### CREATIVITY AND CREATIVE LEADERSHIP

A lecture-discussion course that provides background, techniques, and practice helpful for originating new ideas; describes blocks to creativity which reduce capacity to innovate if unrecognized and unintercepted; provides practice in idea evaluation; describes techniques for "super-vising" creative people and shows how creativity stimulates personal growth.

#### MANAGING YOUR MONEY

A course on personal finance designed to give the consumer basic facts and principles to guide him in making wise decisions with reference to insurance, savings, investments, borrowing, credit, and budgeting.



## **INVESTMENTS**

"Fundamentals of Investment," formerly "How to Invest from \$50 to \$50,000," is frequently offered in answer to popular demand. Topics include insurance, wills, bank deposits, government bonds, real estate, various types of securities, the New York Stock Exchange, mutual funds, investment advisory services, and the importance of fitting the financial plan to the individual.

## **INVESTMENT MANAGEMENT**

A course in management for those with a basic knowledge of the stock market and investment principles. Topics include the selection of stocks most suitable for specific objectives.

## **PLANNING FOR THE LATER DECADES OF LIFE**

A program designed to assist in long-range personal planning to meet the demands of automation, technical change, and forced retirement policies. Consideration will be given to the economic, educational, geographic, vocational, and personal factors in developing second or third careers and preparing for eventual retirement.

## **COURSES OFFERED TO IMPROVE VOCATIONAL AND PROFESSIONAL COMPETENCE**

### **TYPING REFRESHER**

Diagnostic and remedial practice on electric or manual typewriters.

### **STENOGRAPHIC REFRESHER**

Dictation directed toward a review of brief forms, word beginnings, word endings, the 3,000 most frequently used words in the English language, with 80 to 100 word dictation.

### **WRITTEN COMMUNICATION**

A review of the principles of clear and effective writing, particularly as it is a concern of governmental correspondence. Ten sessions, classroom demonstration and discussion of textbook assignments; ten sessions, testing and individual conferences.

### **PREPARATION OF SUMMARIES**

Training in accurate summarizing of classified documents and information in readable form.

### **MANAGEMENT COMMUNICATION**

Elements of the communication process; problems in communication; basic principles of effective communication, psychological and sociological aspects of communication; and problems of specific communication efforts.

### **PROFESSIONAL WRITING (Introductory)**

The essentials of writing techniques. Manuscripts submitted for consideration and criticism of the teacher and class. Analysis of magazine writing opportunities for free-lance writers.

#### PROFESSIONAL WRITING (Advanced)

Emphasis on improving quality and techniques to a professional, salable level. An interval of two weeks between classes gives the student a greater opportunity for manuscript preparation. Major emphasis is upon article writing.

#### WRITING FOR CHILDREN

A noncredit elementary workshop course is offered for beginning writers during the fall semester. An advanced workshop is offered in the spring semester.

#### WRITING FOR TELEVISION AND RADIO

A comprehensive workshop in writing television drama and documentaries. Analysis of current writing opportunities in both television and radio, individual script critique, marketing, copyright, etc.

#### EXECUTIVE SEMINAR: EFFECTIVE ORAL COMMUNICATION

The techniques for effective communication and presentation with assigned subject material. An evaluation of the interviewing technique, counseling, and group participation.

#### EFFECTIVE SPEECH COMMUNICATION

Principles of effective speech communication, including practice in the organization, delivery, and evaluation of presentations commonly encountered in management situations.

#### GROUP DISCUSSION AND CONFERENCE LEADERSHIP

A workshop on the process of thinking and problem solving in committees and small groups, and the methods of leading discussions and conferences.

#### STUDIES IN MANAGEMENT

Studies of modern concepts of the management function and the background of modern management theory, the tools of management, human factors in management, direction of programs, and formulation of policies.

#### MANAGEMENT FOR RESEARCH, DEVELOPMENT, AND TESTING LABORATORIES

Designed to train executives in development of over-all managerial skills. Planned to give executives a general familiarity with tasks, problems, techniques, and methods of management; to relate these general principles to functioning of their specialized business activities; and to provide them with a forum for discussing common problems and interchanging views, knowledge, and experience.

#### MATHEMATICAL AND STATISTICAL TOPICS FOR ACCOUNTANTS

An introduction to some of the mathematical concepts and techniques relative to the work of the accountant which will include lectures on probability statistics with particular emphasis on sampling techniques as aids to managerial decision making and linear programming.

#### BUSINESS MANAGEMENT INSTITUTE

An institute on modern management principles and techniques for

small business executives. Offered in cooperation with the Small Business Administration to improve skill and ability in solving practical business problems.

#### **COURSES PLANNED FOR THE ENRICHMENT OF HOME AND FAMILY LIFE**

##### **BUILDING OR BUYING YOUR HOME**

A course designed to help the person who is planning to build or buy a home get the utmost value for the money he spends and achieve a home that will actually meet the family's physical and social needs. It covers such topics as: the history of housing; community planning; selecting a site; the elements of good design; materials and methods of construction, with relative costs; the mechanical aspects of housing, including plumbing, heating, and ventilation; lighting; maintenance and alterations; and the sociological aspects of housing.

Given in cooperation with the Washington-Metropolitan chapter of The American Institute of Architects.

##### **INSTITUTE FOR PARENTS**

Emphasizes *understanding* in four areas of study: the gifted child, reading problems, modern school methods, and the early adolescent. Primarily to help parents understand their children in relation to themselves as parents, the school, and the community.

##### **UNDERSTANDING MODERN MATHEMATICS**

This course, primarily for parents and laymen, is an introduction to the changes taking place in elementary school mathematics today. The lectures will explore the trend toward a more meaningful, dynamic, and exciting instructional program in mathematics. Topics covered are: (1) why changes are occurring, (2) the nature of the changes, (3) the effect of the changes on methods of teaching, and (4) implications of the changes for mathematics instruction.

##### **HELPING YOUR TEENAGER UNDERSTAND HIMSELF AND HIS WORLD**

This course explores the inner world of the teenager as it is expressed in his self-concept. It attempts to relate the adequacy of the teenager's self-concept to his interaction with family, peers, school, and culture. Emphasis is given to developing an understanding of the complex of factors which affect the teenager's development. The effects of these factors on parents' relationships with their teenagers are also considered.

##### **ENJOYING ART WITH YOUR CHILD**

This workshop will offer an opportunity for parents and children to work together in a variety of art media to help them understand and develop the creative process. Methods of creative thinking that influence the ability to express emotions, thoughts, and visual impressions will be taught. Colorful films on art and slides of art work done by children of all ages will be shown.

##### **WIDENING HORIZONS AND INCREASING ENJOYMENT OF LIFE THROUGH THE ARTS**

##### **ENJOYING THE THEATRE**

A course designed to give the theatre-goer a deeper understanding and



appreciation of the theatre. It is devoted to an appreciation and enjoyment of dramatic art: its nature; its origins and development; the elements of theatre; the role of director, actor, stage design, and audience.

#### **UNDERSTANDING THE ARTS**

A course designed to help the student better understand the meaning of art through a number of compositions in painting, sculpture, architecture, and the motion picture. Lectures and discussions, with colored slides, prints, and motion pictures.

#### **UNDERSTANDING MODERN DANCE THROUGH PARTICIPATION**

Through lecture, film, demonstration, and personal participation the student explores the history of the dance. Training is given in fundamental dance techniques to give the body strength, flexibility, and control. Principles of rhythm, dynamics, and the use of space and other elements underlying dance movement and composition are emphasized.

#### **INTRODUCTION TO THE CULTURAL HISTORY OF RUSSIA**

A survey of the Russian cultural heritage from the origins of ancient Russia to the present. Lectures, discussion, and visual aids. Topics include: the origins of Russia and the culture of its earliest inhabitants, Western and Eastern influences, adoption of Orthodoxy and the subsequent growth of Russian-Byzantine culture, the medieval period, Peter the Great and Russia's westernization, the origins of modern Russia, Russian culture and civilization during the sixty years before the Revolution, the Soviet period.

#### **GREAT CITIES OF EUROPE**

A series of eight weekly seminars, each treating one of the capital cities of Europe as a unique entity from the standpoint of its historical background, culture, and contemporary interest. Presented at the embassies of the various countries and with their cooperation. In 1964-65 the cities were London, Paris, Copenhagen, Vienna, Athens, Rome, Madrid, and Istanbul.

#### **FRENCH FOR THE TOURIST AND ITALIAN FOR THE TOURIST**

Short courses in basic conversation designed to make it possible for the tourist to communicate more readily in countries where these languages are spoken.

#### **UNDERSTANDING MODERN SCIENCE**

##### **DESCRIPTIVE ASTRONOMY**

A descriptive course designed to give a general outline of astronomy to the layman, the student, and the amateur astronomer. It will deal with the sun, moon, planets, stars, the appearance of the sky, and recent developments in the field of astronomy. A tour of the Naval Observatory was arranged for 1964-65.

##### **REFRESHER COURSES IN SCIENCE**

Beginning in the fall of 1965 a series of relatively short refresher courses in the major sciences will be given for the purpose of bringing college graduates in scientific fields up-to-date in their knowledge of recent advances.

#### **PROGRAM SERVICE FOR ORGANIZATIONS**

Courses or lectures may be initiated either by the College or by civic clubs, church groups, trade associations, parent-teacher associations, or other organizations interested in promoting and organizing formal or informal programs of study for their members, securing assistance in setting up and developing their own leadership training courses, or receiving specialized advice or assistance.

Typical courses offered in the past have been the following.

#### **PARLIAMENTARY PROCEDURE**

A short workshop in basic procedures for conducting successful meetings through the skillful application of parliamentary law. The course will help the presiding officer to expedite the business of the organization and at the same time to assist the membership in achieving adequate expression of all points of view while arriving at consensus. It will also help the members of organizations to gain the opportunity of explaining their positions and of participating fully in the decision-making process.

#### **PROGRAM PLANNING FOR ORGANIZATIONS**

Designed especially for civic and club workers. Topics include: planning individual programs, public relations, the responsibility of leadership, and exploring projects and activities for a particular group.

#### **ORIENTATION AND TRAINING PROGRAMS FOR STUDENTS FROM OTHER LANDS**

##### **AGENCY FOR INTERNATIONAL DEVELOPMENT**

The College Preparatory Workshop for Foreign Students, a series of class meetings led by experienced university teachers, introduces the foreign student to the system of higher education in the United States. Students are instructed and given practice in classroom procedures, examination techniques, note taking, report writing, the use of the library, and outside study.

##### **AMERICAN SPEECH AND DICTION**

Designed for employees of foreign embassies. Articulation drills, stress and intonation patterns in "standard" American English, discussion of dialect differences, and vocabulary-building exercises. Individually designed exercises and daily tape recordings.

##### **TAX ADMINISTRATION**

Principles and techniques of the internal administration of a tax agency. The assessment, collection, audit, including excise; property and personal tax. A special course designed for foreign participants under the Agency for International Development.

##### **ADMISSION AND REGISTRATION**

A simplified system of admission and registration is used in noncredit courses.

Such courses are open to any individual interested in enrolling. When a noncredit course is organized at the request of some particular

agency or group, admission may be restricted to the students recommended by the sponsoring organization. Classes may be limited in size in order to maintain the standards desired.

#### FEES

The tuition fees for noncredit courses are determined by the length and nature of the course. Unless a course is cancelled by the University, fees are not refundable.

### NEW HORIZONS FOR WOMEN

Olive Jean McKay, A.M., Ed.D., *Staff Associate (Continuing Education)*  
Jesse Edith Mullins, A.M., *Staff Associate (Continuing Education)*  
Ruth Helm Osborn, Ed.D., *Staff Associate (Continuing Education)*

In accordance with the University's policy of encouraging adults to continue their studies throughout life, the College of General Studies, in 1964, initiated a special program for women. There are no restrictions in age or education. Women enrolling in this program include young homemakers in their twenties, mature women, career girls, and widows. Some have no previous college education; others have advanced degrees. Most women enrolled left college to marry before completing a Bachelor's degree. The following program has been developed to meet the needs of women in the Washington area.

#### ORIENTATION

"Developing New Horizons for Women," a noncredit seminar, is offered each semester to assist women in developing their potential by an analysis of themselves as individuals and as women; by exploring educational, occupational, and community service opportunities; by examining and solving problems encountered when entering or re-entering the educational and occupational worlds.

#### CAREER CONFERENCES

The orientation seminar includes a series of guest speakers who discuss opportunities for "second careers" in teaching, counseling, library work, youth services, and business. From time to time, additional opportunities will be made available for more extensive examination of career areas such as small business and writing.

#### HOW TO STUDY COURSE

A four-session lecture series is designed to help students returning to college after an absence of several years to study more effectively. This course is offered several times each year.

#### COUNSELING SERVICES

Individual counseling is available to assist women in developing educational and vocational plans. As indicated, referrals are made to University and community personnel.



## **CAREER MATERIALS CENTER**

In collaboration with other divisions of the University and community organizations, the College of General Studies will make available recent occupational and educational information.

## **OFF-CAMPUS CLASSES**

As off-campus centers become available in the Washington Metropolitan area, credit and noncredit courses will be offered during the day.

## **Off-Campus Centers**

THE COLLEGE OF GENERAL STUDIES has offered programs in the Centers listed below.

### **Central Intelligence Agency, Washington, D. C. 20505**

Training Officer: Benjamin M. Racusin, Registrar

Office: Room 1D1617, Headquarters Building

Telephone: 351-3101

Field Representative for the University: Michael H. Jessup

Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Science in International Affairs (curriculum requirements differ from those in War Colleges' program).

Length of Courses: Fifteen weeks

Open only to CIA employees

### **Civil Service Commission, Washington, D. C. 20415**

Member of Federal Triangle Educational Association \*

Training Officers: John W. Morgan, Director of Personnel; James S. Keener, Personnel Management Specialist

Office: (Mr. Morgan) Room 1R54, (Mr. Keener) Room 1680, 1900 E Street NW.

Telephone: (Mr. Morgan) 343-6301, (Mr. Keener) 343-6118

Field Representative for the University: Robert C. Whitfield

Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open to employees of the Civil Service Commission and to personnel of other government agencies by permission

### **Department of Commerce**

BUREAU OF THE CENSUS, WASHINGTON, D. C. 20233

Training Officers: James Vawter, Chief, Employee Development Branch,

\* An organization of Federal Agencies situated in the Federal Triangle Area of downtown Washington, D. C.

Personnel Division; John Hickey, Employee Development Officer,  
Personnel Division  
Office: Room 1370, Building FOB 3, Suitland, Maryland  
Telephone: 440-1524  
Field Representative for the University: Robert C. Whitfield  
Telephone: 965-2350  
Type of Course Offered: Undergraduate courses leading to the degrees  
of Associate in Arts and Bachelor of Arts  
Length of Courses: Fifteen weeks  
Open to all employees of the Bureau of the Census and the Naval  
Oceanographic Office, and to other persons by permission

**COAST AND GEODETIC SURVEY, WASHINGTON, D. C. 20230**

Member of Federal Triangle Educational Association

Training Officers: Mrs. Muriel Christgau, Training Branch, Personnel and  
Safety Division; Paul F. Murphy, Employee Development Officer  
Office: Room 827, Washington Science Center, 11800 Old Georgetown  
Road, Rockville, Maryland  
Telephone: 949-5310, Extension 273

Field Representative for the University: Robert C. Whitfield  
Telephone: 965-2350

Type of Course Offered: Undergraduate courses leading to the degrees  
of Associate in Arts, Bachelor of Arts, and Bachelor of Science in  
Geodetic and Cartographic Science

Length of Courses: Fifteen weeks

Open to all employees of the Department of Commerce and to other  
government employees by permission

**DOMESTIC AND INTERNATIONAL BUSINESS, WASHINGTON, D. C. 20230**

Member of Federal Triangle Educational Association

Training Officers: Stephen M. MacArthur and Mrs. Jane deLauder, Em-  
ployee Development Officers

Office: Room 1068, Commerce Department Building, 14th Street and  
Constitution Avenue NW.

Telephone: 967-4974

Field Representative for the University: Robert C. Whitfield  
Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees  
of Associate in Arts and Bachelor of Arts; graduate programs leading to  
the degrees of Master of Science in Financial Management, Master of  
Science in Governmental Administration, and Master of Science in  
Personnel Administration

Length of Courses: Fifteen weeks

Open to employees of the Department of Commerce and to personnel  
of other government agencies by permission

**NATIONAL BUREAU OF STANDARDS, WASHINGTON, D. C. 20234**

Registrar: Mrs. Virginia Maxwell

Office: Room 102, The Manse, Connecticut Avenue and Van Ness  
Street NW.

Telephone: 362-4040, Extension 366 or 7400

Field Representative for the University: Robert C. Whitfield  
Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees  
of Associate in Arts and Bachelor of Arts

Length of Courses: Fifteen weeks

Open to all employees of the National Bureau of Standards—also to all  
employees of other government agencies and to all American citizens,  
providing they meet the formal prerequisites

**PATENT OFFICE, WASHINGTON, D. C. 20231**

**Member of Federal Triangle Educational Association**

**Training Officer:** Willis Hokans, Employee Development Officer

**Office:** Room 6629, Commerce Department Building, 14th Street and Constitution Avenue NW.

**Telephone:** 967-2871

**Field Representative for the University:** Robert C. Whitfield

**Telephone:** 965-2350

**Type of Course Offered:** Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

**Length of Courses:** Fifteen weeks

**Open to employees of the Department of Commerce and to personnel of other government agencies by permission**

**WEATHER BUREAU, WASHINGTON, D. C. 20230**

**Training Officer:** Albert V. Carlin, Head, Career Development Branch

**Office:** Room G108, 4880 MacArthur Blvd.

**Telephone:** 382-4194

**Field Representative for the University:** Robert C. Whitfield

**Telephone:** 965-2350

**Type of Course Offered:** Graduate courses in meteorology

**Length of Courses:** Fifteen weeks

**Open to all government employees by permission of the Weather Bureau**

**Department of Defense**

**THE PENTAGON, WASHINGTON, D. C. 20310**

**After-hours Training Program:** John F. Lobuts, Field Representative for the University

**Room:** Reception center on the Concourse

**Telephone:** 697-3141 or 965-2350

**Education Office U. S. Air Force**

**Education Director:** Mrs. Lois K. Roberts

**Room:** 5D476

**Telephone:** 697-7074 or 697-1863

**Education Office U. S. Army**

**Education Director,** Philip F. Strauss; **Assistant Director,** Charles Negri;

**Education Adviser,** George L. Bowman

**Room:** 3C147

**Telephone:** 697-2823 or 697-6805

**Type of Course Offered:** Undergraduate courses leading to the degrees of Associate in Arts, Associate in Secretarial Administration, Bachelor of Arts, and Bachelor of Business Administration; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

**Length of Courses:** Fifteen weeks in fall and spring semesters; eight and fifteen weeks in Summer Sessions

**Open only to active duty military personnel and Department of Defense civilians**

**DEFENSE SUPPLY AGENCY, ALEXANDRIA, VIRGINIA 22314**

**Employee Development Officers:** Spencer N. Roads and James T. Diffin

**Office:** Room 145A, Building 5

**Telephone:** 698-8050 or 698-8093

**Field Representative for the University:** John F. Lobuts

**Telephone:** 965-2350



Type of Course Offered: Undergraduate courses leading to the degrees of Associate in Arts, Associate in Secretarial Administration, Bachelor of Arts, and Bachelor of Business Administration; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Fifteen weeks in fall and spring semesters; eight weeks in Summer Sessions

Open to employees of the Defense Supply Agency and to personnel of other government agencies by permission

NATIONAL SECURITY AGENCY, FORT MEADE, MARYLAND, 20755

Training Officer: Mrs. Violet Kilmon, Administration

Office: Building 1C190

Telephone: 725-4400, Extension 7047

Field Representative for the University: Jack W. Charles

Telephone: 965-2350

Academic Counselor: Mrs. Stet Tasker

Office: Building 1C190

Telephone: 725-5400, Extension 7414

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts, Bachelor of Arts, and Bachelor of Business Administration; graduate program leading to the degree of Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open only to NSA employees

DEPARTMENT OF THE AIR FORCE

Air Force Technical Applications Center, Alexandria, Virginia 20333

Training Officer: Capt. Phillip K. Frederick, Jr., USAF

Office: 2525 Telegraph Road, Alexandria, Virginia

Telephone: 695-1312

Field Representative for the University: John F. Lobuts

Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts

Length of Courses: Fifteen weeks

Open to military and civilian personnel of the Air Force Technical Applications Center

AIR UNIVERSITY CENTER

Maxwell Air Force Base, Alabama 36113

Education Officer: George D. Rastall

Office: Room 213, Building 800

Telephone: 265-5621, Extension 74234

Director for the University at Maxwell: John Littleton Boone Atkinson

Building: 823

Telephone: 265-5621, Extension 7681

Type of Course Offered:

Air War College—Graduate program leading to the degree of Master of Science in International Affairs

Air Command and Staff College—Undergraduate programs leading to the degrees of Bachelor of Arts and Bachelor of Business Administration; graduate programs leading to the degrees of Master of Science in Business Administration and Master of Science in Public Administration

Length of Courses: Fifteen weeks

Open to students and faculty of the Air War College and the Air Command and Staff College

**Langley Air Force Base, Virginia 23365**

Educational Consultant: Robert J. Dewey

Office: Building 1347

Telephone: 764-3520

Director for the University at The George Washington University Center  
(Tidewater Area), Fort Monroe, Virginia: Robert C. Sedwick

Office: Building T-183

Telephone: 727-3363

Type of Course Offered: Undergraduate program leading to the degrees  
of Associate in Arts and Bachelor of Arts; graduate courses leading to  
the degree of Master of Science in Personnel Administration

Length of Courses: Eight weeks and fifteen weeks

Open to military and civilian personnel of the Air Force and to other  
government employees, by permission of the Commanding Officer of  
Langley Air Force Base

**DEPARTMENT OF THE ARMY**

**Army Map Service, Washington, D. C. 20315**

Training Officer: Jerome E. McClain

Office: Erskine Hall, 6500 Brooks Lane NW.

Telephone: 986-2385

Field Representative for the University: Michael H. Jessup

Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degree  
of Bachelor of Science in Geodetic and Cartographic Science

Length of Courses: Fifteen weeks

Open to employees of the Army Map Service and other government  
employees by permission of the Commanding Officer of the Army Map  
Service

**Army War College, Carlisle Barracks, Pennsylvania 17013**

Project Officer: Lt. Col. William I. Gordon, USA

Office: Room 119, Root Hall

Telephone: CHapel 3-4141, Extension 505

Director for the University at Carlisle Barracks: William L. Tayler

Office: Room 122, Root Hall

Telephone: CHapel 3-4141, Extension 315

Type of Course Offered: Graduate program leading to the degree of  
Master of Science in International Affairs

Length of Courses: Fifteen weeks

Open to students and faculty of the Army War College

**Fort Belvoir, Virginia 22060**

Educational Adviser: Eric Eber

Office: Building T-1483

Telephone: 780-1100, Extension 27154 or 35146

Field Representative for the University: Michael H. Jessup

Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees  
of Associate in Arts, Bachelor of Arts; graduate program leading to the  
degree of Master of Science in Business Administration

Length of Courses: Eight and fifteen weeks

Open to military and civilian personnel of the Army and to other  
government employees, by permission of the Commanding Officer of  
Fort Belvoir

**Fort Detrick, Frederick, Maryland 21701**

Education Adviser: John A. Ports

Office: Civilian Personnel Office

Telephone: MONument 3-4111, Extension 3159

Type of Course Offered: Business Management and Biochemistry courses  
Length of Courses: Fifteen weeks  
Open to civilian employees of Headquarters, Fort Detrick

**Fort Eustis, Virginia 23604**

Director: John Williams  
Office: Building S711, Educational Development Services, Lee Blvd.  
and 12th Street

Telephone: 878-3731 or 878-5508

Director for the University at The George Washington University Center  
(Tidewater Area), Fort Monroe, Virginia: Robert C. Sedwick

Office: Building T-183

Telephone: 727-3363

Type of Course Offered: Graduate program leading to the degree of  
Master of Science in Personnel Administration

Length of Courses: Eight and fifteen weeks

Open to military and civilian personnel of the Army and to other  
government employees, by permission of the Commanding Officer of  
Fort Eustis

**Fort McNair, Washington, D. C. 20315**

Educational Adviser: Miss Margaret Lockwood

Office: Building 20A, Second Floor, Post Education Center

Telephone: 527-9400, Extension 268

Field Representative for the University: Elzberry Waters, Jr.

Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees  
of Associate in Arts and Bachelor of Arts

Length of Courses: Eight and fifteen weeks

Open to military and civilian personnel of the Army and to other  
government employees, by permission of the Commanding Officer of  
Fort McNair

**Fort George G. Meade, Maryland 20755**

Training Officer: Gustaf E. Berglund

Office: Building 303, Army Education Center

Telephone: 677-6421

Field Representative for the University: Jack W. Charles

Telephone: 965-2350

Type of Course Offered: Graduate programs leading to the degrees of  
Master of Science in Financial Management, Master of Science in Gov-  
ernmental Administration, and Master of Science in Personnel Admin-  
istration

Length of Courses: Fifteen weeks

Open to military and civilian personnel of the Army and to other  
government employees by permission of the Commanding Officer of  
Fort George G. Meade

**Fort Monroe, Virginia 23351**

Educational Director: Paul Rahenkamp

Office: Building T-183, Education Center

Telephone: 727-2454 or 727-3692

Director for the University at The George Washington University Center  
(Tidewater Area), Fort Monroe, Virginia: Robert C. Sedwick

Office: Building T-183

Telephone: 727-3770 or 727-3363

Type of Course Offered: Undergraduate program leading to the degrees



of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Undergraduate courses, eight weeks; graduate courses, fifteen weeks

Open to military and civilian personnel of the Army and to other government employees, by permission of the Commanding Officer of Fort Monroe

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**Fort Myer, Virginia 22208**

Educational Adviser: Miss Margaret Lockwood

Office: Building 604, South Area, Post Education Center

Telephone: 527-9400, Extension 268

Field Representative for the University: John F. Lobuts

Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts

Length of Courses: Eight and fifteen weeks

Open to military and civilian personnel of the Army and to other government employees, by permission of the Commanding Officer of Fort Myer

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**Walter Reed Army Medical Center, Washington, D. C. 20012**

Education Officers: Lt. John H. Lelesch, USA, Chief, Education and Training Branch; Robert E. Hynes, Director of General Educational Development

Office: Room 1, Building 80

Telephone: 576-3670

Field Representative for the University: Michael H. Jessup

Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Eight and fifteen weeks

Open to military and civilian personnel of the Department of Defense and to personnel of other government agencies by permission

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**DEPARTMENT OF THE NAVY**

**Main Navy Building, Washington, D. C. 20360**

Training Officers: Edward Goemaat, Head, Training Branch, DCPD; Miss Kathleen V. Sullivan, Employee Development Officer

Office: Room 0116, Main Navy Building, Constitution Avenue at 18th Street NW.

Telephone: 696-6155

After-hours Training Program: Jack W. Charles, Field Representative for the University

Telephone: 965-2350

Type of Course Offered: Undergraduate courses leading to the degrees of Associate in Arts, Associate in Secretarial Administration, and Bachelor of Arts; graduate programs, leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open to military and civilian personnel of the Department of Defense

**Bureau of Naval Personnel, Washington, D. C. 20370**

Training officers: Capt. J. J. Creamer, USN, Head, Education and Training Branch; DeWitt Fisher, Deputy Head; Paul L. Frantz, Special Programs Coordinator

Office: Room 3725, Arlington Annex

Telephone: 694-2403 or 694-2776

Field Representative for the University: Robert C. Whitfield

Telephone: 965-2350

Type of Course Offered: Special courses in Human Relations and Management, Public Speaking for Naval Personnel, Russian, and Governmental Budgeting

Length of Courses: Fifteen weeks

Open to military personnel on active duty in the Department of the Navy by quota assigned to the various bureaus and offices

**Bureau of Naval Weapons, Washington, D. C. 20360**

Training Officers: H. G. Pirrung, Head, Employee Training and Development Branch; James L. Miller, Assistant Head; Mrs. Honorah B. Peter, Training Officer

Office: Room 4848, Main Navy Building, Constitution Avenue at 19th Street NW.

Telephone: 696-7341

Field Representative for the University: Jack W. Charles

Telephone: 965-2350

Type of Course Offered: Special courses in Human Relations and Management

Length of Courses: Fifteen weeks

Open to civilian and military personnel on active duty in the Bureau of Naval Weapons by quota assigned to the various divisions and offices, and to civilian employees of the Department of the Navy by permission

**Bureau of Ships, Washington, D. C. 20360**

Training Officer: Mrs. Edna K. Trudeau, Employee Development Officer, Employee Development Branch

Office: Room 2436, Main Navy Building, Constitution Avenue at 18th Street NW.

Telephone: 696-2927

Field Representative for the University: Jack W. Charles

Telephone: 965-2350

Type of Course Offered: Graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open to military and civilian personnel of the Department of Defense

**Bureau of Yards and Docks, Washington, D. C. 20390**

Training Officers: Robert J. Wilson, Director, Training Division; George H. Lindgren, Robert G. Bidwell

Office: Room 1A-95, Yards and Docks Annex, Memorial Drive and H Road, Arlington, Virginia

Telephone: 695-4367

Field Representative for the University: Robert C. Whitfield

Telephone: 965-2350

Type of Course Offered: Graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open to military and civilian personnel of the Navy and to other government employees, by permission of the Commanding Officer

**David Taylor Model Basin, Carderock, Maryland 20007**

**Training Officer:** Leonard Ackerman, Head, Training Division

**Office:** Room 226, Building 121

**Telephone:** 995-1501

**Field Representative for the University:** Robert C. Whitfield

**Telephone:** 965-2350

**Type of Course Offered:** Special in-service training courses arranged by the Training Officer

**Length of Courses:** Fifteen weeks

Open to military personnel and civilian employees of the David Taylor Model Basin and to other government employees, by permission of the Commanding Officer of the installation

**Military Sea Transportation Service, Washington, D. C. 20390**

**Training Officers:** Maurice V. Foreman, Director, Training Division:

John W. Meadows, Assistant to the Director

**Office:** Room 1215, Building T-8, 3800 Newark Street NW.

**Telephone:** 696-9620

**After-hours Training Program:** Robert C. Whitfield, Field Representative for the University

**Telephone:** 965-2350

**Type of Course Offered:** Undergraduate and graduate courses

**National Naval Medical Center, Bethesda, Maryland 20014**

**Educational Services Officer:** Lt. (j.g.) B.K. Bingman, USN

**Office:** Room 32, Building 7

**Telephone:** 497-4585

**Field Representative for the University:** Robert C. Whitfield

**Telephone:** 965-2350

**Type of Course Offered:** Undergraduate and graduate courses

**Length of Courses:** Fifteen weeks

Open to military and civilian personnel of the Navy, employees of the National Institutes of Health, and to other government employees by permission of the Commanding Officer of the National Naval Medical Center

**Naval Oceanographic Office, Suitland, Maryland 20390**

**Employee Development Officers:** Willis L. Tressler, Director: Edmund J.

Klukowski, Employee Development Officer

**Office:** Room G-126, Building FOB 3

**Telephone:** 736-2700, Extension 592

**Field Representative for the University:** Robert C. Whitfield

**Telephone:** 965-2350

**Type of Course Offered:** Undergraduate programs leading to the degrees of Associate in Arts, Bachelor of Arts, and Bachelor of Science in Geodetic and Cartographic Science

**Length of Courses:** Fifteen weeks

Open to military and civilian personnel of the Navy, employees of the Census Bureau; others may obtain permission to attend by calling the Education and Training Office, 736-2700, Extension 592

**Naval Propellant Plant, Indian Head, Maryland 20640**

**Training Officer:** Leland Cook, Supervisory Employee Development Officer

**Office:** Industrial Relations Office, Room 3, Building D-325

**Telephone:** RIverside 3-2111, Extension 280 or 480

**Field Representative for the University:** Robert C. Whitfield

**Telephone:** 965-2350

**Type of Course Offered:** Undergraduate and graduate courses

**Length of Courses:** Fifteen weeks



Open to military and civilian personnel of the Navy and to other government employees and civilians, by permission of the Commanding Officer of Naval Propellant Plant

**Naval Research Laboratory, Washington, D. C. 20390**

Training Officers: William J. McLaughlin, Head, Training Branch; E. C. Reinhardt, Head, Science Education Section  
Office: Rooms 102 and 113, Building 43, 4555 Overlook Avenue SW.  
Telephone: 574-1856 or 574-1858

Field Representative for the University: Robert C. Whitfield  
Telephone: 965-2350

Type of Course Offered: Undergraduate and graduate courses  
Length of Courses: Fifteen weeks

Open to military and civilian personnel of the Navy at the Naval Research Laboratory and other government employees, by permission of the Director, Naval Research Laboratory

**Naval Supply Center, Norfolk, Virginia 23511**

Training Officers: Mrs. Mary K. Lawson, Director; Bernard A. La Barge, Industrial Relations Department  
Office: Building W-143  
Telephone: 444-2144 or 444-4912

Director for the University at The George Washington University Center (Tidewater Area), Fort Monroe, Virginia: Robert C. Sedwick  
Office: Building T-183  
Telephone: 727-3363

Type of Course Offered: Graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open to military and civilian personnel of the Navy and to other government employees, by permission of the Commanding Officer

**Naval War College, Newport, Rhode Island, 02844**

Project Officer: CDR Roy F. Hoffmann, USN  
Office: Room 114, Luce Hall  
Telephone: 841-3021

Director for the University at Newport: James Kenneth McDonald  
Office: Room 361, Pringle Hall  
Telephone: 847-2629

Type of Course Offered: Graduate program leading to the degree of Master of Science in International Affairs

Length of Courses: Nine weeks

Open to faculty and students of the Naval War College

**Naval Weapons Laboratory, Dahlgren, Virginia 22448**

Training Officer: Mac A. Curtis, Head, Employee Development Division  
Office: Industrial Relations Building  
Telephone: North 3-2511, Extension 609

Field Representative for the University: Robert C. Whitfield  
Telephone: 965-2350

Type of Course Offered: Undergraduate and graduate courses  
Length of Courses: Fifteen weeks

Open to military and civilian personnel of the Department of Defense and others, by permission of the Commanding Officer of the installation

**U. S. Marine Corps Schools, Quantico, Virginia 20390**

Education Officer: Lt. Elizabeth A. Wilson, USMC  
Office: Education Office, Special Services Building, Little Hall

Telephone: Quantico 1000, Extension 26749  
Field Representative for the University: Jack W. Charles  
Telephone: 965-2350  
Type of Course Offered: Undergraduate and graduate courses  
Length of Courses: Eight and fifteen weeks  
Open to military personnel and their dependents and civilian personnel attached to the Marine Corps Schools

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U. S. Naval Academy, Annapolis, Maryland 21402  
Coordinator for the Academy: William W. Jeffries, Senior Professor of English, History, and Government Department  
Office: Maury Hall  
Telephone: 268-7711, Extension 642  
Field Representative for the University: Jack W. Charles  
Telephone: 965-2350  
Type of Course Offered: Graduate program leading to the degree of Master of Science in Personnel Administration and undergraduate courses  
Length of Courses: Eight and fifteen weeks  
Open to military and civilian personnel attached to the Academy and other personnel by permission of the Naval Academy

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U. S. Naval School of Hospital Administration, Bethesda, Maryland 20014  
Commanding Officer: Capt. E. L. Van Landingham, Jr., MSC, USN  
Academic Director: LCDR Joseph Feith, MSC, USN  
Office: Room 131, Building 141  
Telephone: 497-4340  
Field Representative for the University: Robert C. Whitfield  
Telephone: 965-2350  
Type of Course Offered: Undergraduate program leading to the degree of Bachelor of Arts  
Length of Courses: Fifteen weeks  
Open to military personnel assigned to duty under instruction at the U. S. Naval School of Hospital Administration

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U. S. Naval Station, Washington, D. C. 20390  
Training Officer: Mrs. Marie J. Muir, Supervisory Training Officer  
Office: Second Floor, Building 172, M at 8th Street SE.  
Telephone: 698-3160 or 698-3188  
Field Representative for the University: Robert C. Whitfield  
Telephone: 965-2350  
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate courses in accounting, administration, and personnel management  
Length of Courses: Fifteen weeks  
Open to military and civilian personnel of the Navy and to other government employees, by permission of the Commanding Officer

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U. S. Navy Marine Engineering Laboratory, Annapolis, Maryland 21402  
Training Officer: Lorick F. Fox  
Office: Training Center, Building 42  
Telephone: 268-7711, Extension 8210  
Field Representative for the University: Jack W. Charles  
Telephone: 965-2350  
Type of Course Offered: Undergraduate and graduate courses  
Length of Courses: Fifteen weeks  
Open to military and civilian personnel of the Navy and to other government employees and civilians, by permission of the Commanding Officer

#### JOINT SERVICE SCHOOLS

Industrial College of the Armed Forces, Fort McNair, Washington, D. C. 20315

Project Officer: Col. Haydon J. Price, USA

Office: Room 206, Industrial College of the Armed Forces

Telephone: 695-8305

Director for the University: James C. Dockeray

Office: Room 201, Hall of Government, 710 Twenty-first Street NW.

Telephone: 338-0250, Extension 512 or 539

Type of Course Offered: Graduate program leading to the degree of Master of Science in Business Administration

Length of Courses: Fifteen weeks

Open to students and faculty of the Industrial College of the Armed Forces

National War College, Fort McNair, Washington, D. C. 20315

Project Officer: Col. Robert C. Cassibry, USA

Office: Room 116, National War College

Telephone: 695-8404

Director for the University: Charles E. Galbreath

Office: Room 36, Building F, 706-712 Twentieth Street NW.

Telephone: 965-2350

Type of Course Offered: Graduate program leading to the degree of Master of Science in International Affairs

Length of Courses: Fifteen weeks

Open to students and faculty of the National War College

#### Department of Health, Education, and Welfare

##### SOCIAL SECURITY ADMINISTRATION

Bureau of Old Age and Survivors Insurance, Baltimore, Maryland 21235

Employee Development Officer: William B. Wiley, Chief, Educational Facilities Section

Office: Room 147, Headquarters

Telephone: 944-5000, Extension 2430 or 2429

Field Representative for the University: Jack W. Charles

Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open to employees of the Social Security Administration and to personnel of other governmental agencies by permission

#### Department of Justice, Washington, D. C. 20530

Member of Federal Triangle Educational Association

Training Officer: Daniel Keenan, Departmental Training Officer

Office: Room 1226, Justice Department Building, 10th Street and Pennsylvania Avenue NW.

Telephone: 737-8200, Extension 3124

Field Representative for the University: Robert C. Whitfield

Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, Master of Science in Personnel Administration



**Length of Courses:** Fifteen weeks

Open to employees of the Department of Justice and to personnel of other government agencies by permission

**Federal Bureau of Investigation, Washington, D. C. 20535**

**Special Agent: William E. Clark, Personnel Office**

Office: Room 4513, Justice Department Building, 9th Street and Pennsylvania Avenue NW.

Telephone: 393-7100, Extension 402

**Field Representative for the University: Michael H. Jessup**

Telephone: 965-2350

**Type of Course Offered:** Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts

**Length of Courses:** Fifteen weeks

Open to employees of the Federal Bureau of Investigation only

**Department of Labor, Washington, D. C. 20210**

**Member of Federal Triangle Educational Association**

**Training Officers: James C. Stephens, Employee Development Officer; Kenneth Bute, Assistant Training Officer**

Office: Room 6419, Labor Department Building, 14th Street and Constitution Avenue NW.

Telephone: 961-2101

**Field Representative for the University: Robert C. Whitfield**

Telephone: 965-2350

**Type of Course Offered:** Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

**Length of Courses:** Fifteen weeks

Open to employees of the Department of Labor and to personnel of other government agencies by permission

**Department of State, Washington, D. C. 20520**

**Liaison Officer: Evert T. Little, Chief, Extension Training Division**

Office: Room 1100, Foreign Service Institute, State Annex 3, Arlington, Virginia

Telephone: 383-8549

**Field Representative for the University: Robert C. Whitfield**

Telephone: 965-2350

**Type of Course Offered:** Special courses designed for employees self-development

**Length of Courses:** Fifteen weeks

Open to employees of the Department of State, C.I.A., and U.S.I.A.

**Department of the Treasury, Washington, D. C. 20226**

**BUREAU OF ACCOUNTS**

**Member of the Federal Triangle Educational Association**

**Training Officer: Michael D. Tate, Employee Development Officer**

Office: Room 104, Treasury Annex Number 1, Pennsylvania Avenue and Madison Place NW.

Telephone: 964-5367

**Field Representative for the University: Robert C. Whitfield**

Telephone: 965-2350

**Type of Course Offered:** Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open to employees of the Department of the Treasury and to personnel of other government agencies by permission

BUREAU OF CUSTOMS, WASHINGTON, D. C. 20226

Member of Federal Triangle Educational Association

Training Officers: James J. Doherty, Head, Employee Development Unit;  
Alfred F. Murphy, Employee Development Officer

Office: 2100 K Street NW.

Telephone: 964-2548

Field Representative for the University: Robert C. Whitfield

Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open to employees of the Department of the Treasury and to personnel of other government agencies by permission

BUREAU OF NARCOTICS, WASHINGTON, D. C. 20226

Member of Federal Triangle Educational Association

Training Officer: Walter Panich, Administrative Officer

Office: Room 8000B, U. S. Coast Guard Building, 1300 E Street NW.

Telephone: 964-2243

Field Representative for the University: Robert C. Whitfield

Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open to employees of the Department of the Treasury and to personnel of other government agencies by permission

COAST GUARD, WASHINGTON, D. C. 20226

Member of Federal Triangle Educational Association

Training Officers: Jasper L. Kranke, Supervisory Training Officer; Mrs. Eva Fletcher, Training Instructor

Office: Room 4211, U. S. Coast Guard Building, 1300 E. Street NW.

Telephone: 964-5350

Field Representative for the University: Robert C. Whitfield

Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open to employees of the Coast Guard and to personnel of other government agencies by permission

INTERNAL REVENUE SERVICE, WASHINGTON, D. C. 20224

Member of Federal Triangle Educational Association

Training Officers: P. R. Glott, Chief, National Office Training Branch;  
Joel Pinnix, Miss Ruby Bennett, Employee Development Training Officers

68 THE COLLEGE OF GENERAL STUDIES

Office: Room 1315, Internal Revenue Service Building, 12th Street and Constitution Avenue NW.

Telephone: (Mr. Glott and Miss Bennett) 964-3931, (Mr. Pinnix) 964-4015

Field Representative for the University: Robert C. Whitfield

Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open to employees of the Department of the Treasury and to personnel of other government agencies by permission

#### **District of Columbia Government, Washington, D. C. 20001**

Member of Federal Triangle Educational Association

Training Officer: Benjamin Ludwig, Chief of Training; C. Howard Larson, Employee Development Officer

Office: Room 209, District of Columbia Government Building, 499 Pennsylvania Avenue NW.

Telephone: 629-2270 or 629-2997

Field Representative for the University: Robert C. Whitfield

Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open to employees of the District of Columbia Government and to personnel of other government agencies by permission

#### **DEPARTMENT OF PUBLIC WELFARE**

Children's Center, Laurel, Maryland 20810

Training Officer: Reginald Orem, Employee Development Officer

Office: Administration Building

Telephone: 725-3600, Extension 286

Field Representative for the University: Robert C. Whitfield

Telephone: 965-2350

Type of Course Offered: Special courses in Psychology

Length of Courses: Fifteen weeks

Open to personnel of the Children's Center and to personnel of other District and federal government agencies by permission

#### **District of Columbia General Hospital, Washington, D. C. 20003**

Associate Director, Nursing Service Education: Miss Virginia Sage

Office: Anne Archbold Hall, District of Columbia General Hospital, 19th and Massachusetts Avenue SE.

Telephone: 547-9200, Extension 336

Field Representative for the University: Michael H. Jessup

Telephone: 965-2350

Type of Course Offered: Selected undergraduate and graduate courses

Length of Courses: Fifteen weeks

Open to employees of the District of Columbia General Hospital and others by permission

#### **Federal Aviation Agency, Washington, D. C. 20553**

Member of Federal Triangle Educational Association

Training Officer: Miss Beverly McCarthy, Employee Development Officer



Office: Room 505, 800 Independence Avenue SW.  
Telephone: 962-5673

Field Representative for the University: Robert C. Whitfield  
Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open to employees of the Federal Aviation Agency and to personnel of other government agencies by permission

**Federal Communications Commission, Washington, D. C. 20554**  
Member of Federal Triangle Educational Association

Training Assistant: Mrs. June Eisenberger

Office: Room 200, 521 12th Street NW.

Telephone: 393-3620, Extension 165

Field Representative for the University: Robert C. Whitfield  
Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open to employees of the Federal Communications Commission and to personnel of other government agencies by permission

**Federal Reserve Board, Washington, D. C. 20551**

Training Officer: June A. Stetter, Administrative Assistant, Division of Personnel Administration

Office: Federal Reserve Building, 20th Street and Constitution Avenue NW.

Telephone: 737-1100, Extension 435

Field Representative for the University: Robert C. Whitfield  
Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open to all government employees and others by permission.

**The George Washington University Center (Tidewater Area), Fort Monroe, Virginia 23351**

Director for the University: Robert C. Sedwick

Secretary and Office Staff Assistant: Mrs. Dorothy E. Croft

Office: Building T-183

Telephone: 727-3363

**Interstate Commerce Commission, Washington, D. C. 20423**  
Member of Federal Triangle Educational Association

Training Officer: Dyrck van Duyl, Training Officer

Office: Room 1418, Interstate Commerce Building, 12th Street and Constitution Avenue NW.

Telephone: 628-7460, Extension 7116

Field Representative for the University: Robert C. Whitfield  
Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open to employees of the Interstate Commerce Commission

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**National Science Foundation, Washington, D. C. 20036**

Training Officer: David C. Larkin

Office: 1800 G Street NW.

Telephone: 343-7753

Field Representative for the University: Robert C. Whitfield

Telephone: 965-2350

Type of Course Offered: Courses leading to the degrees of Associate in Arts and Bachelor of Arts

Length of Courses: Fifteen weeks

Open to all government employees by permission of the National Science Foundation

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**Post Office Department, Washington, D. C. 20260**

Member of Federal Triangle Educational Association

Training Officers: F. L. Royer, Mrs. Jeanne Hoag, Employee Development Officers

Office: Room 3140, New Post Office Building, 12th Street and Pennsylvania Avenue NW.

Telephone: 961-7237

Field Representative for the University: Robert C. Whitfield

Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open to employees of the Post Office Department and to personnel of other government agencies by permission

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**Tidewater Area, Virginia, see The George Washington University Center, page 70**

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**Veterans Administration, Washington, D. C. 20420**

Training Officers: Harold B. Luckett, Chief, Employee Relations and Training Division; Philip L. Loomis, After-hours Training Coordinator

Office: Room 115, Veterans Administration Main Building, Vermont Avenue and H Street NW.

Telephone: 389-3102

Field Representative for the University: Robert C. Whitfield

Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate programs leading to the degrees of Master of Science in Financial Management, Master of Science in Governmental Administration, and Master of Science in Personnel Administration

Length of Courses: Fifteen weeks

Open to employees of the Veterans Administration and to personnel of other government agencies by permission

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**Melpar, Incorporated, Falls Church, Virginia 22042**

Personnel Representative: Miss Margaret R. Kiley

Office: Personnel Office, Central Office Building, 3000 Arlington Boulevard, Falls Church, Virginia

Telephone: 534-6000, Extension 2350  
Field Representative for the University: Michael H. Jessup  
Telephone: 965-2350  
Type of Course Offered: Undergraduate and graduate courses in mathematics.  
Length of Courses: Fifteen weeks  
Open to Melpar employees only

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### Education Courses for Teachers

Undergraduate and graduate courses for elementary and secondary school teachers have been given by the College of General Studies in coordination with the School of Education in the school systems in the areas listed below. Teachers interested in having a program in Education started in their communities should make their requests known through their Directors of Instruction to Gerrit TenBrink (Telephone: 965-2350). Field Representative for The George Washington University for Off-Campus courses in Education.

#### ALEXANDRIA PUBLIC SCHOOLS

John C. Albohm, Superintendent  
418 South Washington Street  
Alexandria, Virginia 22314

Telephone: 549-9100

#### ANNE ARUNDEL COUNTY PUBLIC SCHOOLS

Mrs. Ruth Dudderar, Assistant Superintendent  
Anne Arundel County Board of Education  
Annapolis, Maryland

Telephone: 268-3345

#### ARLINGTON COUNTY PUBLIC SCHOOLS

Harold Mack, Director, Secondary Education  
1426 N. Quincy Street  
Arlington, Virginia 22201

Telephone: 522-7700

#### BERKELEY COUNTY PUBLIC SCHOOLS

Jack K. Randolph, Superintendent of Schools  
David E. Mudge, Assistant Superintendent  
Berkeley County Public Schools  
Martinsburg, West Virginia 25401

Telephone: Martinsburg 8978

#### CALVERT COUNTY PUBLIC SCHOOLS

Maurice A. Dunkle, Superintendent of Schools  
Prince Frederick, Maryland 20678 Telephone: Prince Frederick 76 and 86

#### CHARLES COUNTY PUBLIC SCHOOLS

Edward Turner, Assistant Superintendent  
Charles County Board of Education  
LaPlata, Maryland

Telephone: 934-8141

#### CLARKE COUNTY PUBLIC SCHOOLS

George W. Burton, Superintendent  
Clarke County Public Schools  
Berryville, Virginia 22611

Telephone: Berryville 38

#### FAIRFAX COUNTY PUBLIC SCHOOLS

W. Harold Ford, Assistant Superintendent for Instruction  
Fairfax County School Board  
Fairfax, Virginia 22150

Telephone: 273-6500



FREDERICK COUNTY PUBLIC SCHOOLS

Edward Hamilton, Assistant Superintendent for Instruction  
115 East Church Street

Frederick, Maryland 21701

Telephone: 662-4191

JEFFERSON COUNTY PUBLIC SCHOOLS

T. A. Lowery, Superintendent

Miss Lucille Heflebower, Supervisor of Instruction

Jefferson County Public Schools

Charles Town, West Virginia 25414

Telephone: Charles Town 64

LOUDOUN COUNTY PUBLIC SCHOOLS

Caleb J. Gibson, Director of Instruction

Mrs. Ruth D. Schulke, Supervisor, Elementary Education

Loudoun County School Board

Leesburg, Virginia 22075

Telephone: SPring 7-2570

MONTGOMERY COUNTY PUBLIC SCHOOLS

Richard Collier, Director of Staff Development

Leonard M. Orloff, Teacher Specialist

Montgomery County School Board, Box 231

Rockville, Maryland 20850

Telephone: 762-5000, Extension 395

PRINCE GEORGES COUNTY PUBLIC SCHOOLS

Edward S. Beach, Jr., Director of Curriculum

Prince Georges County School Board

Upper Marlboro, Maryland 20870

Telephone: 627-2811

PRINCE WILLIAM COUNTY PUBLIC SCHOOLS

Claude E. DeHaven, Assistant Superintendent for Instruction

Prince William County School Board

Manassas, Virginia 22110

Telephone: EMpire 8-2104

ST. MARY'S COUNTY PUBLIC SCHOOLS

Robert S. King, Jr., Superintendent of Schools

James Ogdon, Supervisor of Instruction

St. Mary's County School Board

Washington Street

Leonardtown, Maryland 20650

Telephone: GRGreenwood 5-9141

WORCESTER COUNTY PUBLIC SCHOOLS

Paul S. Hyde, Superintendent of Schools

Ernest G. Holland, Assistant Supervisor of Pupil Personnel

Worcester County School Board

Market Street

Snow Hill, Maryland 21863

Telephone: Snow Hill 582 and 583

## COURSES OF INSTRUCTION

ON THE FOLLOWING PAGES of this CATALOGUE, under the alphabetically arranged names of the departments of instruction, are listed the courses of instruction offered by the College of General Studies required in degree programs. The courses as here listed are subject to some slight change. The University reserves the right to withdraw any course announced.

Courses of instruction are scheduled by Installation Education Directors of the various groups, organizations, agencies, and installations interested in conducting an Off-Campus program of college courses. These classes are generally offered in the late afternoon or evening, are identical with the daytime and evening sections of corresponding courses on campus, are taught by many of the same instructors, and carry the same amount of credit. By taking the evening and summer classes and extending the time of study beyond the customary four years, a student who is able to give only part of his time to college work may complete a regular curriculum and obtain a degree.

### EXPLANATION OF COURSE NUMBERS

Courses are assigned dual numbers. The first is a serial number assigned by the College of General Studies at the time of the registration. The serial number does not appear in this catalogue and is used to distinguish one class from another when the same course is offered simultaneously at different places. The second number is the course number assigned by the department and indicates the academic level of each course.

The following system of numbering is used:

*First-group courses.*—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. With the approval

of the adviser and the dean, they may also be taken by juniors and seniors. In certain instances, they may be taken by graduate students to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

*Second-group courses.*—Courses numbered from 101 to 200 are planned for students in the junior and senior years. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the dean responsible for the graduate work and by the instructor and when the completion of additional work has been certified by the instructor.

*Third-group courses.*—Courses numbered from 201 to 300 (in Columbian College of Arts and Sciences and the School of Government, Business, and International Affairs), courses numbered 201 to 400 (in the School of Education) are planned primarily for graduate students. They are open, with the approval of the instructor, to qualified seniors; they are not open to other undergraduates.

*Fourth-group courses.*—Courses numbered 301 to 400 in Columbian College of Arts and Sciences are limited to graduate students; but they are primarily for doctoral candidates. In the School of Education fourth-group courses, numbered 401 to 500, are limited to graduate students with Master's degrees from accredited institutions.

#### INDICATION OF THE AMOUNT OF CREDIT

The number of semester hours of credit given for the satisfactory completion of a course is, in most cases, indicated in parentheses after the name of the course. Thus, a year course giving 3 hours of credit each semester is marked (3-3), and a semester course giving 3 hours of credit is marked (3). A semester hour usually consists of the completion of one fifty-minute period of class work or of one laboratory period a week for one semester.

## Accounting\*

*Program Director:* John Coughlan, Ph.D., C.P.A., Associate Professor of Accounting, Room 100, Hall of Government, 710 Twenty-first Street NW.; Telephone: 338-0250, Extension 243 or 610

### 1-2 Introductory Accounting (3-3)

*First half:* basic principles underlying accounting records, preparation of the work sheet and financial statements, accounting for single proprietorships and partnerships. *Second half:* accounting for corporations and introduction to cost accounting, analysis of financial statements, and valuation and amortization problems. Prerequisite to Accounting 2: Accounting 1 or permission of the instructor.

### 101 Cost Accounting (3)

Theory and purposes of industrial cost accounting; treatment of systems of cost control and determination; analysis and interpretation of cost data; job, process, and standard cost systems. Prerequisite: Accounting 1-2.

\* Administered by the Department of Government and Business, James Carlton Dockeray, Chairman.



- 111 Financial Statement Analysis (3)**  
Methods and techniques of preparing, analyzing, and interpreting financial statements for the guidance of operating executives, directors, stockholders, and creditors; influence of price level changes on accounting data; determination and interpretation of trends and ratios. Prerequisite: Accounting 1-2 or permission of the instructor.
- 115 Survey of Accounting (3)**  
An introduction to the basic principles underlying financial statements and records with emphasis on the use of accounting information in the management process. Study of theory, terminology, cost accounting, and interpretation of financial data. Not open for credit to Accounting majors.
- 121-22 Intermediate Accounting (3-3)**  
*First half:* valuation and amortization problems of current assets, long-term investments, tangible fixed assets, intangible assets, and deferred charges; accounting for current, noncurrent, contingent, and estimated liabilities. Prerequisite to 121: Accounting 2 or permission of the instructor. *Second half:* accounting for the organization, financing, operation, and dissolution of corporations and partnerships; basic principles of consignment and installment sales. Prerequisite to 122: Accounting 121 or permission of the instructor.
- 141 Governmental Accounting (3)**  
Problems relating to governmental appropriation accounts, encumbrances, and fund accounting. Emphasis on municipal and state government accounting with an introduction to federal accounting. Prerequisite: Accounting 1-2 or permission of the instructor.
- 144 Federal Accounting (3)**  
Accounting procedures in the Federal Government, with emphasis on agency level accounts, implementation of accrued expenditure legislation, and accounting support for cost-based budgets. Accounts of United States Treasury; current concepts of allotment, obligation, and disbursement accounting and reporting. Prerequisite: Accounting 141 or permission of the instructor.
- 161 Income Tax Accounting (3)**  
Problems involved in the federal income taxation of individuals and corporations, differences between tax accounting and financial accounting, social security taxes. Prerequisite: Accounting 1-2.
- 171 Auditing (3)**  
Duties and responsibilities of auditors: principles and procedures of making audits, techniques of verifying each financial statement item, preparation of audit working papers and reports. Prerequisite: Accounting 121-22.
- 181 Accounting Systems (3)**  
Theory and procedure of designing and installing accounting systems for collecting, recording, analyzing, and presenting accounting data. Prerequisite: Accounting 101, 121-22, and 171, or permission of the instructor.
- 191 Advanced Accounting (3)**  
Consolidated statements, statement of affairs, realization and liquidation reports, and estate and trust accounting. Prerequisite: Accounting 121-22.
- 193 Business Budgeting (3)**  
Principles, techniques, and procedures involved in the development, installation, and operation of a system of budgetary control to aid in the

management of commercial and industrial organizations. Prerequisite: Accounting 1-2.

**211-12 Managerial Accounting (3-3)**

*First half:* analysis of the accounting system with special reference to the use of financial and operating records and accounting reports as tools of management; a study of valuation and amortization problems including the influence of price level changes on accounting data. Prerequisite: Accounting 1-2 or 115. *Second half:* a survey of internal accounting controls, commercial budgets, and cost accounting systems used by management in directing and controlling a business. Prerequisite to Accounting 212: Accounting 211 or permission of the instructor.

**215 Survey of Managerial Accounting (2 or 3)**

Nature, preparation, analysis, and interpretation of accounting reports; study of cost accounting, business budgeting, and internal accounting controls with emphasis on their use in the management process. Prerequisite: Accounting 1-2 or 115, or permission of the instructor. Not available for credit to students taking Accounting 211-12.

**293 Budget Preparation and Administration (3)**

Principles of and research on the formulation, adoption, and execution of a system of budgetary control to aid in the management of commercial or industrial business.

## **American Thought and Civilization**

**101 American Civilization (3)**

Lecture (1¼ hours), discussion (1¼ hours). This is a University-sponsored course designed to offer all students, toward the end of their residence, a broad assessment of the culture in which they are to live and to work. Contemporary problems and characteristics of American society are presented against the background of the humanities and social sciences. Each lecture is delivered by an authority on a particular subject: political, social, and economic problems; international attitudes; important trends in literature, science, the arts, religion, and philosophy. Discussion sections will combine lecture materials with assigned readings in order to achieve an ordered sense of the over-all state of American civilization. Prerequisite: successful completion of 85 semester-hours credit. Open to undergraduate and graduate students, but available for graduate credit only with the approval of the department and college concerned. Recommended as an elective, but not to be taken as part of any major program without specific departmental approval. Available only on campus.

## **Anthropology\***

*Chairman:* Patrick Francis Gallagher, Ph.D., Associate Professor of Anthropology, Room 12, Building X, 2107 H Street NW.; Telephone: 338-0250, Extension 585

\* Anthropology 1-2 is prerequisite to all other courses in Anthropology.

**1-2 Introductory Anthropology (3-3)**

(Replaces Anthropology 1 and Anthropology 52)

*First half:* a survey of man's origin, physical evolution, and culture history.  
*Second half:* a survey of the world's cultures, illustrating the principles of cultural behavior.

**186 Physical Anthropology (3)**

(Formerly Anthropology 152)

A study of human variation past and present, seen as a product of physical and cultural evolution.

**263 Culture Contact and Change (3)**

Western impact on non-Western cultures. The workings and the processes of social change as variant cultures and ethical systems interact.

## **Biology\***

*Chairman:* Ira Bowers Hansen, Ph.D., Professor of Zoology, Room 302, Building C, 2029 G Street NW.; Telephone: 338-0250, Extension 452

**†1-2 Introductory Biology (4-4)**

Lecture (2 hours), laboratory (4 hours). This course is designed to provide the nonscience student with an understanding of the life sciences and to serve as a basis for those who may wish to continue in some aspect of biology. It is the introductory course leading to all second- and third-group courses in biology, botany, and zoology. Material fee, \$10 a semester.

## **Business Administration†**

*Program Director:* Harry Robert Page, M.B.A., Assistant Professor of Business Administration, Room 201, Hall of Government, 710 Twenty-first Street NW.; Telephone: 338-0250, Extension 507

**101 Introduction to Business (3)**

The business environment; its effects upon the decision-making process.

**102 Fundamentals of Management (3)**

Planning, organizing, directing, coordinating, and controlling the activities of the administrative unit; evolution of management thinking.

**103 Institutional Management (3)**

Philosophy of hospital administration: special services, food service, maintenance, internal review.

\* Administered by the Department of Biological Sciences.

† This course is offered on campus only.

‡ Administered by the Department of Government and Business, James Carlton Dock-  
eray, Chairman.



- 105 **Personnel Management (3)**  
Industrial personnel and manpower programs, organizations and policy in personnel activities.
- 106 **Problems in Personnel Management (3)**  
Principles of manpower management illustrated by cases drawn from business, industry, and government. Prerequisite: Business Administration 105.
- 107 **Labor-Management Contracts (3)**  
Management's role in the negotiation and administration of collective bargaining agreements, as essential to development of good labor-management relations.
- 109 **Office Management (3)**  
Organization and layout of an office, use of office machines and appliances, planning and execution of work, supervision problems.
- 111-12 **Personnel Records Administration (3-3)**  
*First half:* basic principles, techniques, and methods used in collecting, processing, evaluating, and storing personnel records of all kinds. *Second half:* problems and cases in special kinds of records keeping and records administration.
- 113 **Real Estate (3)**  
Fundamentals of real estate practice; leasing and property management; valuation, financing, and taxation.
- 118 **Introduction to Data Processing (3)**  
Basic principles and methods of data processing. An introduction to the fundamentals, potentials, and problems of automatic data processing for management information systems.
- 119 **Data Processing Programming (3)**  
Basic principles and methods of computer programming. An introduction to the basic computer programming concepts, and the form and character of instructions and programming schema for the leading types of digital electronic computers. Prerequisite: Business Administration 118 or permission of the instructor.
- 120 **Data Processing Systems (3)**  
Basic principles and methods of data systems analysis, design, and implementation. Emphasis is placed on relationship between equipment systems and management information systems. Prerequisite: Business Administration 118 or permission of the instructor.
- 121 **Property and Casualty Insurance (3)**  
A general course in underlying principles of property, life, marine, and casualty insurance, and the function of insurance in the economic life of a business or individual.
- 122 **Life Insurance and Estate Planning (3)**  
Life insurance contracts, their use in providing protection and estate development.
- 131 **Business Finance (3)**  
Basic principles involved in the financing of business enterprises. Prerequisite: Accounting 1-2.
- 136 **Credit Management (3)**  
Types and sources of credit information, credit relationships from the standpoint of the commercial bank and the commercial business enterprise. Prerequisite: Accounting 1-2.

- 138 **Investments (3)**  
Analysis of factors of investment credit with application to different types of investments, proper selection of investments for various classes of investors, regulation. Prerequisite: Accounting 1-2, Business Administration 131.
- 141 **Basic Marketing Management (3)**  
An introduction to marketing and marketing management in relation to our total economy and business management, consumer and demand analysis, retailing, wholesaling, major marketing management problems and policies with particular emphasis on major decision areas and tools. Prerequisite: Economics 1-2.
- 142 **Marketing Management Problems (3)**  
Practical problems of retailers, wholesalers, and manufacturers considered through the use of cases and text material; fundamental considerations in marketing decisions and the nature of the problem-solving process. Prerequisite: Business Administration 141.
- 143 **Marketing Research (3)**  
Principles and practices of marketing research with particular emphasis upon basic methods and techniques, sources and interpretation of data, and presentation of results.
- 145 **Sales Management (3)**  
Organization of the sales department, sales planning and forecasting, quotas, territories, performance standards, and analysis and control of distribution costs. Prerequisite: Business Administration 141.
- 147 **Advertising (3)**  
Advertising as a function of marketing and merchandising; uses and limitations of advertising as a tool of management; fundamentals involved in getting a finished advertisement before potential customers; evaluation, criticism, and control of advertising.
- 150 **Procurement and Materials Management (3)**  
Purchasing organization, procedures, and policies; market relationships, selection of merchandise and sources of supply; procurement information and records; evaluation of procurement practices in industry and government.
- 158 **Traffic Management (3)**  
Organization and records of traffic department, routing of shipments, services by carriers, rates and charges, relation of shipper to transportation agencies.
- 161 **Commercial Law: Contracts, Sales, Agency, and Bailments (3)**
- 162 **Commercial Law: Negotiable Instruments, Property, Mortgages (3)**
- 163 **Law in Relation to the Form of Business Units: Corporations, Partnerships, and Trusts (3)**
- 171 **Principles of Transportation (3)**  
Impact of transport on society; development, economic characteristics, services, rates, and regulation of the various modes of domestic intercity transportation.
- 172 **Public Utilities (3)**  
Legal and economic meaning of the public utility concept; development, services, economic characteristics, rate making, and regulation of the various utility industries, with particular emphasis on electric, gas, telephone, and urban transit industries.

- 173 **Commercial Motor Transportation (3)**  
Organization, management services, economic characteristics, rates, and regulation of motor transport firms; highways and highway financing considered from the point of view of both producers and users of the services.
- 174 **Commercial Air Transportation (3)**  
Organization, management services, economic characteristics, rates, and regulation of air transport firms; policies and activities of the government in the development, promotion, and control of air transport.
- 175 **Introduction to Foreign Trade (3)**  
Terminology, trade usages and practices, conditions essential to successful trading, economic bases of international trade, obstacles to trade, tariffs, impact of governmental controls on private trade. Prerequisite: Economics 1-2.
- 176 **Exporting and Importing (3)**  
Policy and operating problems of foreign trade, financing, documentation, packing and transportation of shipments, ocean marine insurance, and U. S. Customs procedure and formalities.
- 177 **Foreign Markets (3)**  
Patterns of World Trade by countries and commodities. Methods of preparing foreign market surveys, selected regional analyses. Prerequisite: Economics 1-2 and Business Administration 141.
- 178 **Management of International Business Operations (3)**  
Analysis of overseas projects according to purpose and type of organization; case studies involving development and management of overseas marketing programs and other operations in different areas of the world.
- 181 **Manufacturing Production (3)**  
Basic principles and methods of manufacturing production. Manufacturing facilities, plant and equipment. Illustrations selected from various process and fabrication industries.
- 191 **Business Reports and Analyses (3)**  
Sources of management information, array and analysis of data, interpretation and presentation of the findings.
- 193 **Management Communication (3)**  
A survey course in the problems of communication; written communication; style and format; oral communication; oral briefing and presentation; group leadership; rapid reading; completed staff work; and related subjects.
- 195 **Controllershship (3)**  
The duties, responsibilities, and place of the controller in a business organization; relations of controller to other departments and regulatory bodies; and the controller's relation to price setting and inventories, depreciation policies, internal auditing, expense control and budgeting; and financial reports to management, stockholders, and employees. Prerequisite: Accounting 1-2. Open to seniors.
- 198 **Case Problems in Management (3)**  
Principles and techniques of management illustrated by cases drawn from business and industry. Prerequisite: Business Administration 102, 105, 131, 141.
- 199-200 **Research (3-3)**



- 209 **Seminar: Personnel Management (3)**  
Discussion of industrial personnel and manpower management, and research in advanced problems.
- 210 **The Personnel Manager (3)**  
The job of the personnel manager and his place in the organization; relations of the personnel manager to other executives; the personnel manager's policy role, and his relations with the chief executive. Key problems of the senior personnel executive.
- 218 **Survey of Data Processing (3)**  
A survey of modern data processing systems with emphasis on the management problems associated with the installation and use of such systems.
- 219 **Digital Computer Programming Concepts (3)**  
Machine functions and programmed control, instructions and programs, subroutines, general purpose programming, business oriented programming languages. Prerequisite: Business and Public Administration 204 or permission of instructor.
- 220 **Comparative Digital Computer Systems and Their Management (3)**  
Properties and capacities of the range of data processing equipments in use today, special purpose equipments in business, recent and prospective equipment developments. Fundamentals of data processing installation management. Prerequisite: Business Administration 218 or 219, or permission of the instructor.
- 221 **Management Information Systems Development and Application (3)**  
The analysis and design of management information systems; the integration of data processing in the regular operations of the government or business organization, and its impact on management organization and decision making. Management's part in systems planning is emphasized. Prerequisite: Business Administration 218 or 219, or permission of the instructor.
- 227 **Linear Programming (3)**  
Introduction to the vocabulary and methodology of management science through the study of linear programming techniques. Case studies. Prerequisite: Business and Public Administration 204.
- 228 **Introduction to Operations Research for Management (3)**  
Operations research as an approach to the solution of management problems. Emphasis is on the relevance and limitations of operations research. Practical applications are examined. Prerequisite: Business and Public Administration 204.
- 235 **Financial Management (2 or 3)**
- 237 **Investment Analysis (3)**  
An advanced course in the applications of investment principles and analytical techniques to the selection of investments. Prerequisite: Business Administration 138.
- 241 **Advanced Marketing Management (3)**  
Marketing management problems and policies in major decision areas of product planning, channels of distribution, advertising, personal selling, sales promotion, pricing, and development of integrated marketing programs. Marketing research and other tools useful in decision making. Case analysis.
- 242 **Seminar: Marketing Theory (3)**  
Critical review of the development of marketing thought and important

marketing literature. Special and current problems and/or trends in marketing and their impact on the firm and society. Prerequisite: Business Administration 241.

**250 Procurement and Contracting (3)**

An examination of the business aspects of federal procurement and contract management.

**251 Retail Management (3)**

Managerial problems and policies concerning financing, location, organization structure, merchandise policies, advertising and sales promotion, personnel management, operating and service policies, accounting and control, and other related retail management problems. Case analysis.

**261 Business Economics I (3)**

Applications in economic analysis. Uses economic theory and statistics for establishment of criteria for business decisions involving policies on profits, prices, production, investments, and inventories. Prerequisite: Economics 217 and Statistics 111-12 or the equivalent, or consent of the instructor.

**262 Business Economics II (3)**

Utilizes statistical techniques and aggregate economics for appraising economic forecasts and making business forecasts. Prerequisite: Economics 218 or the equivalent, or consent of the instructor.

**263 Business Organization and Management (3)**

Principles and techniques of administration and management. Analysis of methods of forecasting, planning, organizing, assembling personnel and resources. Historical development of management as a background for present day methods.

**288 Executive Leadership (3)**

Examination of principles and problems of executive leadership and development; intensive consideration of basic issues and guides to executive action in business and public administration; review of the literature, significant research findings, and practical illustrations.

**291 Seminar: Business Management (3)**

Research on various phases of management as practiced in American industry.

**293-94 Business Research (3-3)**

**296 Seminar: Controllership (3)**

Research on advanced problems of financial analysis and management.

**297 Case Studies in Business Administration (3)**

Problems of management are analyzed with the view of developing a practical solution; cases are used to show the problems of personnel in marketing, industrial management, finance, etc.

**299 Thesis Seminar (3)**

An examination of thesis standards, research philosophy, and methodology.

**300 Thesis (3)**

## **Business and Public Administration\***

*Chairman:* James Carlton Dockeray, Ph.D., Professor of Finance, Room 201, Hall of Government, 710 Twenty-first Street NW.; Telephone: 338-0250, Extension 512 or 539

- 201 **Advanced Administrative Management (2 or 3)**  
An advanced course in administration emphasizing principles and practices common to administrative units of all kinds.
- 204 **Quantitative Factors in Administration (3)**  
Developments in quantitative methods of administration.
- 205 **Seminar: Communication and Executive Action (3)**  
Seminar in the communication processes. Research and analysis, identification of factors relating to receptivity; the dynamics of communication.
- 206 **Personnel Management (3)**  
Basic principles; structure and organization of personnel offices; responsibilities; interagency relationships; personnel staffing, training, and work measurement.
- 207 **Human Factors in Administration (2 or 3)**  
Individual, group, intergroup, and other human behavior and development; application of social science research to administration. Practical applications will be emphasized.
- 208 **Current Issues in Organizational Behavior (3)**  
A study of such current issues as automation, ethics, labor-management relations, and similar problems that affect the human organization. Students will do field research projects on these issues. Prerequisite: Business and Public Administration 207.
- 262 **Contemporary Administrative Theory and Practice (3)**  
Current theories and trends in management with particular attention to the behavioral sciences communications and applicability of research.
- 268 **Management Engineering (3)**  
Analysis of the techniques for initiation and implementation of management engineering programs, with emphasis on organization and methods surveys including the study of work measurement, work simplification, management audits, and other management improvement programs. Not open to students who have taken Business and Public Administration 269.
- †280-81-82 **Managerial Aspects of National Security (3 or 4-3 or 4-3)**  
The application of business management principles to the military aspects of national security; organization and administration of the Federal Government for national defense; management of national resources (natural, human, energy, economic); budgeting and controllership; determination of requirements; procurement; production; supply management; and communications.
- 287 **Relation of Government to Business (3)**  
Activities of government in their relation to business management in such areas as labor relations, wages, production, and prices. Trend and change in economic activity and its bearing upon government policy.

\* Administered by the Department of Government and Business.

† Available only to students in the Master of Science in Business Administration program at the Industrial College of the Armed Forces and the Air University.



**295 Research Methods (3)**

Research techniques, sources of information, array and analysis of data, interpretation and presentation of the findings.

## **Chemistry\***

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*Chairman:* Charles Rudolph Naeser, Ph.D., Professor of Chemistry, Room 201, Samson Hall, 2036 H Street NW.; Telephone: 338-0250, Extension 261

**3-4 Fundamentals of Physical Science (4-4)**

A year course: credit is not given for the first half until the second half is completed. Lecture (3 hours), laboratory (3 hours). Selected topics from chemistry, physics, astronomy, and geology are integrated to introduce the nonscience major to the basic methods and achievements of physical science. Laboratory fee, \$11 a semester.

**11-12 General Chemistry (4-4)**

A year course: credit is not given for the first half until the second half is completed. Lecture (3 hours), laboratory (3 hours), recitation (1 hour). Elementary course in general chemistry. Prerequisite: one year of high school algebra. Laboratory fee, \$18 a semester.

## **Chinese (Mandarin)†**

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*Chairman:* Helen Bates Yakobson, B.S., Associate Professor of Russian, Room 2, Building X, 2107 H Street NW.; Telephone: 338-0250, Extension 275 or 496

**1-2 First-year Chinese (3-3)**

A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, reading, writing basic Chinese characters.

**3-4 Second-year Chinese (3-3)**

A year course: credit is not given for the first half until the second half is completed. Continuation of grammar and spoken Chinese, more emphasis on the written language, reading, writing commonly used Chinese characters, reading selected writings. Prerequisite: Chinese 1-2 or the equivalent.

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\* Offered on campus only.

† Administered by the Department of Slavic and Oriental Languages and Literatures.

## Economics

*Chairman:* Wilson Emerson Schmidt, Ph.D., Professor of Economics, Room 401, Monroe Hall, 2115 G Street NW.; Telephone: 338-0250, Extension 235

- \*1-2 **Principles of Economics (3-3)**  
Lecture (2 hours), recitation (1 hour). Survey of the major economic principles, institutions, and problems in contemporary life. Economics 1 is prerequisite to Economics 2.
- 101-2 **Economic Analysis (3-3)**  
Analysis of demand, supply, and pricing; theory of national income determination.
- 105 **Business Cycles (3)**  
Description and analysis of the facts of economic instability, survey of recent business cycle theory, forecasting, and consideration of counter-cyclical policies.
- 121 **Money and Banking (3)**  
Theory of money, credit, and banking; commercial banking and the Federal Reserve System; other financial institutions; international aspects of money; current financial problems.
- 123 **Monetary Theory and Policy (3)**  
Principal contemporary theories, background of recent monetary policy.
- 141 **Unionism and Collective Bargaining (3)**  
The development and characteristics of American unionism and collective bargaining as economic and social institutions, appraisal of economic and social aspects, public policies and controls.
- 142 **Labor Economics (3)**  
Characteristics of the American labor force, operations of labor markets, wage theories and practices, impact of collective bargaining, causes and characteristics of unemployment, public policies and programs.
- 161-62 **Public Finance and Taxation (3-3)**  
General survey of government expenditures; sources and methods of taxation; economic effects of expenditures, taxes, and of government debt policies.
- 165 **Government Control of Economic Activity (3)**  
Changing role of government in promoting and regulating economic activity, types and spheres of control.
- 181-82 **International Economics (3-3)**  
*First half:* survey of the theory of international trade, factor movements, and balance-of-payments adjustment. *Second half:* analysis of modern international economic problems including problems of less developed countries.
- 217-18 **Survey of Economics (2 or 3-3)**  
Survey of economic analysis and policy. Not open to graduate students in economics or economic policy.

\* Economics 1-2 is prerequisite to all other courses in Economics.

- 241 **Unionism, Collective Bargaining, and Labor Economics (3)**  
An accelerated introductory course in labor economics primarily for graduate students in Personnel Administration.
- 244 **Problems in Unionism, Collective Bargaining, and Labor Economics (3)**  
Concentrated study of selected economic, social, and legal aspects of labor relations and labor economics.
- 246 **Foreign Labor Movements (3)**  
Labor in the economic, social, and political structures of selected foreign countries. Contrasts and comparisons with the United States.
- 251-52 **Economic Development (3-3)**  
The theories and problems of economic growth with special attention to the underdeveloped countries.

## Education

*Chairman:* Blake Smith Root, A.M., Ed.D., Professor of Education, Room 300, Building D, 2013 G Street NW.; Telephone: 338-0250, Extension 672

- 108 **Human Development, Learning, and Teaching (3)**  
Lecture (2 hours), conference (1 hour), field work (2 hours). For the general student as well as the prospective teacher. Principles of effective teaching based on an understanding of human development and the nature of learning. Prerequisite: Psychology 22 or 121.
- 112 **Educational Measurement (3)**  
Scope, needs, services to students, selection and construction of teacher-made tests, interpretation of tests for evidence purposes. Prerequisite: Education 108 and 123.
- 113 **Elementary School Art (3)**  
Lecture and laboratory (3 hours), field work—as arranged. For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22, or 121. Material fee, \$4.50.
- 114 **Elementary School Music (3)**  
Lecture (2 hours), field work (2 hours).  
For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22, or 121.
- 115 **Teaching of Reading in the Elementary School (3)**  
Lecture (2 hours), field work (2 hours). A basic course in methods, techniques, materials, and activities essential to a good elementary school reading program. Prerequisite: Education 108 and 123, or teaching experience.
- 116 **Social Studies in the Elementary School (3)**  
Lecture (2 hours), field work (2 hours). Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123, or teaching experience.



- 117 Science in the Elementary School (3)**  
Lecture (2 hours), field work (2 hours). Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123, or teaching experience.
- 118 Teaching Science in the Elementary School (3)**  
Designed to meet the needs of elementary teachers who wish to improve their science background and become more skillful in the method of teaching; content based on needs of group; nontechnical with respect to science content, practical in method aspect; simple experiments, observations, use of printed materials, field trips, observation of teaching; a how-to-do course for teachers who have little science knowledge and feel insecure in their science teaching. Prerequisite: Education 108 and 123 or teaching experience.
- 120 Mathematics in the Elementary School (3)**  
Lecture (2 hours), field work (2 hours). Content, methods, materials, concepts of "new mathematics," and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123, or teaching experience.
- 123 Society and the School (3)**  
Lecture (2 hours), conference (1 hour), field work (2 hours). For the general student as well as the prospective teacher. Historical and social development of education at local, national, and international levels; cooperation of the school with other community agencies; functions of school personnel.
- 128 Children's Literature (3)**  
Exploring and evaluating the newer books for children and the children's classics, understanding the contribution of literature in child development, appreciating children's original expressions. Prerequisite: Psychology 1 and 22.
- \*138 Teaching Social Studies in Secondary Schools (2 to 4)**  
Lecture (2 hours), field work (2 hours). Prerequisite: 24 semester hours of social studies.
- \*146 Teaching Foreign Languages (2 to 4)**  
Prerequisite: 18 semester hours of one foreign language.
- 147 Foreign Language Instruction in the Elementary School (2)**  
Methods, materials, and activities essential in teaching foreign languages in the elementary school.
- 161 Management of the Hospital Nursing Unit (3)**  
Analysis of nursing today, the hospital, structure and changing functions, basic concepts of management, personnel practices and activities, interpersonal relationships, legal aspects and safety factors, economics—inventories, and evaluation procedures of the hospital nursing unit.
- 180 Introduction to the Education of Exceptional Children (3)**  
A survey course to acquaint prospective teachers of the retarded with the various types and degrees of mental, physical, social, and emotional deviations seen in the school population and to help them to accommodate such children in a school program. Prerequisite: Education 108 and 123, or the equivalent and permission of the adviser.

\* This is a special methods course. Prerequisite to all special methods courses: Education 108, 123, and 131, or adequate experience. Additional prerequisites are stated under each course.

**181 Nature and Needs of Exceptional Children I—the Mentally Retarded (3)**

Nature and needs of children with varying degrees of retardation. Causation and diagnosis of retardation and its psychological and sociological implications. Principles of learning with respect to teaching retarded children. Deviations of behavior in the mentally retarded. Prerequisite: Education 108 and 123, or the equivalent and permission of the adviser.

**185 Teaching Younger Mentally Retarded Children (Nursery and Elementary School Age) (3)**

Educational methods and curriculum for the mentally retarded at different levels of maturity within the scope of the course. Organization and planning of instructional activities; selection and preparation of materials and equipment; community resources; records and reports; health and welfare services. Prerequisite: Education 180 and 181, or the equivalent and permission of the adviser.

**186 Teaching Older Mentally Retarded Children (Junior and Senior High School Age) (3)**

Methods and curriculum for the mentally retarded at different levels of maturity within the scope of the course. Organization and planning of instructional activities; selection and preparation of materials and equipment; community resources; records and reports; health and welfare services; occupational training; employment opportunities; job analyses; citizenship education. Prerequisite: Education 180 and 181, or the equivalent and permission of the adviser.

**189 Practicum in Teaching Exceptional Children (6 to 9)**

Supervised student teaching in classrooms for exceptional children under the direction of a qualified teacher and the supervision of the University staff. Student teaching fee, \$50. A minimum of 150 clock hours is required for 6 semester hours of credit; 225, for 9 hours. Prerequisite: Education 180 and 181.

**\*205-6 The Curriculum (3-3)**

For experienced teachers. *First half:* curriculum foundations and issues; comparison of curriculum patterns. *Second half:* principles and procedures in curriculum development; group consideration of student problems.

**\*207 Curriculum Materials (3)**

For experienced teachers. Construction of courses of study, resource units, classroom teaching aids, and inexpensive materials; direct application to students' own situations.

**208 Human Development, Learning, and Teaching (3)**

Lecture (2 hours), conference (1 hour), field work (2 hours). For graduate students. Principles of effective teaching based on an understanding of human growth and development and the nature of learning. Prerequisite: Psychology 1 and 22, or 121.

**209 Child Growth and Development (3)**

An interdisciplinary approach to child development is emphasized. Special attention is given to the analysis, interpretation, and practical implications for instruction of significant research in the various disciplines which have contributed most to the knowledge of child development.

**210 Adolescent Growth and Development (3)**

An interdisciplinary approach to adolescent growth and development is emphasized. Particular attention is given to the analysis, interpretation,

\* Prerequisite: adequate professional preparation.

and practical implications for instruction of significant research in the various disciplines which have contributed most to the knowledge of the adolescent.

- 211 Evaluation in Education (3)**  
Concept of evaluation, relationship between evaluation of ends and means, steps involved in the evaluation of learning outcomes. As the course progresses each student develops solutions for evaluation problems related to his work situation.
- 212 Educational Measurement (3)**  
Basic measurement techniques; construction, selection, administration, and interpretation of objective and essay-type examinations; statistical analysis of test results; laboratory experiences in the use of test instruments.
- 213-14 History of Education (3-3)**  
*First half:* the European backgrounds of American education. *Second half:* the evolution of the American school system.
- \*216 Education of Slow-learning Children (3)**  
Identification, nature, and needs of slow-learning elementary and junior high school children. Emphasis on diagnosis and treatment of learning difficulties.
- \*217-18 Philosophy of Education (3-3)**  
*First half:* designed to help students formulate a personal philosophy of education. *Second half:* social foundations of education—a study of the forces that shape the policies and offerings of the school.
- \*219 Elementary School Classroom Procedures (3)**  
Current classroom practices with particular emphasis on ways of planning, unit teaching, techniques in discipline; individual and group evaluation techniques, resources for learning, providing for individual differences.
- \*221 Early Childhood Education (3)**  
The philosophy and principles underlying the teaching of four- to seven-year olds. Emphasis is on organization, equipment, methods, and materials for promoting the growth needs of young children.
- \*223-24 Reading Problems (3-3)**  
For experienced teachers. Study of reading difficulties on elementary and secondary school levels; classroom and clinical procedures in solving reading problems.
- 227 Basic Issues in Elementary Education (3)**  
A consideration of basic issues in the purposes, organization, and conduct of elementary education. Emphasis on the philosophical and psychological roots of fundamental assumptions as they relate to classroom practices.
- 228 Instructional Areas in Elementary Education (3)**  
Critical appraisal of the objectives, organization, content, and teaching methods in the language arts, arithmetic, social studies, science, arts and crafts, health and physical education.
- 229 Administration of Elementary Education (3)**  
For experienced teachers and administrators. Administration as a means of achieving instructional objectives, organizing learning and teaching activities, handling supplies and equipment, maintaining the building, and integrating school and community life. Emphasis upon guide lines to action.

\* Prerequisite: adequate professional preparation.



**\*231 Secondary School Classroom Procedures (3)**

Survey of current classroom practices with particular attention to selected topics such as teacher-pupil planning, group procedures, pupil security, initiatory and culminating activities, individual and group evaluation techniques, teaching aids, etc.; review of recent literature.

**\*233 Audio-visual Education (3)**

Lecture (2 hours), laboratory (1 hour). Role of audio-visual materials in learning; selection, evaluation, and use of materials; administrative problems in the care, operation, maintenance, and use of audio-visual materials and equipment. Material fee, \$7.

**\*241 Education of the Gifted (3)**

For classroom teachers. Nature and discovery of giftedness, provisions for the gifted in regular classes, experimental projects.

**\*243 Human Relations in the Classroom (3)**

Principles and practices involved in interpersonal relationships between learner and teacher and among learners.

**\*245 School and Community (3)**

The school as an important member of a team of social agencies that builds the community.

**246 Guidance and Counseling of the Mentally Retarded (3)**

Educational, mental, social, and vocational guidance of mentally retarded children. The role of the teacher in parent counseling. Community agencies involved in post-school rehabilitation, guidance, and recreational services for the mentally retarded. Prerequisite: Education 185 and 186 or the equivalent, or permission of the adviser.

**\*251 Guidance in Elementary and Secondary Schools (3)**

A survey course: scope; needs; organization of the program; services to students, the instructional staff, and the administration; personnel needed for the program.

**252 Organization and Administration of Guidance Services (3)**

Designed for guidance directors and supervisors and experienced school counselors who hope to qualify for such positions in the near future. Prerequisite: a minimum of 15 semester hours of approved graduate work in measurement and guidance.

**253 Analysis of the Individual for Purposes of Counseling (3)**

A detailed study of individual analysis techniques with practice in handling such methods. Prerequisite: Education 112 or the equivalent.

**\*254 The Junior High School (3)**

Purposes, organization, core program, guidance, developing course of study, extra-classroom activities.

**257 Occupational and Educational Information (3)**

Designed to acquaint vocational and educational counselors with the basic occupational and educational information necessary in counseling. Sources of data and techniques of collecting, analyzing, and disseminating for purposes of guidance.

**258 Techniques of Counseling (3)**

An intensive study of the educational and psychological processes involved in counseling interviews. Specific types of vocational, educational, and

\* Prerequisite: adequate professional preparation.

personal counseling problems are discussed. Prerequisite: 12 semester hours in testing and guidance, including Education 253 and 257. In exceptional cases Education 253 or 257 may be taken concurrently with 258.

**\*259-60 Secondary School Management (3-3)**

For experienced teachers and administrators with two years of successful teaching in secondary schools. Management planning, execution, and control; criteria of good management; construction of the master schedule; leadership problems incident to the development of new policies and programs.

**263-64 Employee Training (3-3)**

*First half:* nature and purpose, review of major programs—orientation, supervisory, apprentice, clerical skills, communication. *Second half:* administrative problems and practices, training media, coordination with other management functions. Prerequisite: adequate professional preparation or two years of experience in employee training.

**265-66 Teaching Secondary School English—Materials, Resources, Content (3-3)**

A refresher course for teachers of English. Discussion of new approaches to course content. Offered in cooperation with the departments of English and Speech. *First half:* communication skills—structural linguistics, composition, and speech. *Second half:* American and English literature.

**\*271 The Teacher and School Administration (3)**

A survey course for teachers and prospective administrators. Education and world affairs, national agencies, role of the state, local administration, school finance, legal controls, school plant, public support, democratic administrative procedures, improving teaching conditions.

**\*272 The Teacher and School Supervision (3)**

Nature, organization, human relationships, and techniques.

**\*275 School Finance (3)**

Educational financial theory, practice, and control, including methods of financing.

**\*276 Seminar: Public Relations in School Administration (3)**

Purposes, gathering materials, disseminating agencies, publicity media, public participation in policy making.

**\*278 School Law (3)**

Sources and scope of school law; legal rights and responsibilities of teachers, pupils, and taxpayers. Other legal problems of major interest to the group.

**\*285 Student Activities (3)**

Nature and purposes of selected activities—homeroom, clubs, assemblies, school publications, student council, interscholastic contest; particular attention to sponsorship, participation, finance, and evaluation.

\* Prerequisite: adequate professional preparation.

**OFFERED IN AFFILIATION WITH THE WASHINGTON  
SCHOOL OF PSYCHIATRY**

The following Education courses, offered by the Washington School of Psychiatry in affiliation with The George Washington University, are available to graduate students in the School of Education and to qualified students in the Division of University Students and the College of General Studies. The Staff of the Washington School of Psychiatry will conduct these courses at the School of Psychiatry, 1610 New Hampshire Avenue, NW., Washington, D. C.

**234 Communication Skills for Teachers and Principals (3)**

The life-space interview in the school setting between the teacher and the child or the principal and the child; the planned interview between the teacher and the parent or the principal and the parent.

**235 Role of the Teacher in the Changing Community (3)**

Racial, ethnic, and social class population shifts and accompanying problems of housing, health, and public safety, with emphasis on the human relations and mental health aspects of the current situation; supports, techniques, and resources available to educators.

**236 Emotional Factors in Learning (3)**

For counselors and guidance staff, principals, special education teachers, pupil personnel workers. Problems of guidance derived from divergent or pathological motivational patterns in the child or family. Class limited to 25 students.

**237 Emotional Problems Confronting the Teacher (3)**

The teacher's relationship with other teachers, the administration, the school system, and pupils; techniques of interviewing and dealing with parents, members of the school staff, and the community.

**238 Seminar: Learning Problems and Disabilities (3)**

Emotional learning blocks, socioeconomic disadvantages, brain damage and hyperactivity, psychosomatic symptoms and health questions affecting learning, curriculum planning and its relation to mental health and learning growth, communication and motivation.

**239 Educational Problems of the Urban Child (2)**

Mental health problems affecting the urban child's vocational, educational, and emotional needs; teacher-child relationship, language differences in various socioeconomic environments. Curriculum planning.

**240 Techniques of Interviewing for Teachers and School Staff (3)**

An intensive study of specific interview techniques and requisite skills. Specific problems encountered by teachers and staff will be discussed.



## English\*

*Chairman:* John Palmer Reesing, Jr., Ph.D., Professor of English Literature, Room 403, Building D, 2013 G Street NW.; Telephone: 338-0250, Extension 276

### ENGLISH COMPOSITION

#### Basic English (0)

Instruction, drill, and exercises in grammar, vocabulary, spelling, and mechanics in general; instruction and exercises in composition and reading. This course is designed to prepare students for English 1. No academic credit. Tuition fee, \$60.

#### \*1 English Composition (3)

A course in the analysis and practice of expository techniques with emphasis on unity, development, and organization.

#### \*1x English Composition (3)

An intensive course in English grammar and composition to which are assigned students whose placement tests show them inadequately prepared for the regular work of English 1. The course begins with detailed instruction, drill, and exercises in the basic structure of the English language and in the writing of paragraphs; it continues with the content of English 1. English 1x meets five hours a week and carries 3 semester hours of credit. The total fee is \$163 (the tuition fee of \$138 plus an additional fee of \$25.)

#### 2 English Composition (3)

Readings and practice in expository and argumentative techniques and in research procedure. Prerequisite: English 1 or 1x.

#### 11 The Writing of Reports (3)

Theory and practice in the writing of technical reports. Prerequisite: English 1 or 1x and 2.

### ENGLISH LITERATURE

#### 51-52 Introduction to English Literature (3-3)

Historical survey. Prerequisite: English 1 or 1x.

#### 91-92 Introduction to European Literature (3-3)

Consideration of various types. Prerequisite: English 1 or 1x.

#### 135-36 Shakespeare (3-3)

### AMERICAN LITERATURE

#### 71-72 Introduction to American Literature (3-3)

A historical survey. *First half:* from the beginnings to the Civil War. *Second half:* from the Civil War to the present. Prerequisite: English 1 or 1x.

\* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared for English 1 will be assigned to *Basic English*. In lieu of *Basic English*, Off-Campus students may, if they desire, be given permission to register for English 1x on campus. English 1 or 1x is prerequisite to all other courses in English.

- 143 The Development Narrative in Literature (3)**  
A study of those works in world literature dealing with the development of the child.
- 144 American Literature Since 1920 (3)**  
Poetry, drama, and the novel. Readings and discussion.
- 177-78 The American Novel (3-3)**  
Historical and critical study of significant novels and short stories. *First half:* from beginnings through 19th century. *Second half:* the 20th century.

## French\*

*Chairman:* William Graham Clubb, Ph.D., Professor of French, Room 10, Building A, 2026 G Street NW.; Telephone: 338-0250, Extension 425 or 426

- 1-2 First-year French (3-3)**  
A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern French prose.
- 3-4 Second-year French (3-3)**  
A year course: credit is not given for the first half until the second half is completed. Conversation, grammar, composition, reading in modern French prose, introduction to French civilization. Prerequisite: French 1-2, or two years of high school French.
- 51-52 Survey of French Literature and Civilization (3-3)**  
The social, artistic, and cultural background of French civilization. Lectures, readings, recitations, and informal discussions.

## Geodetic and Cartographic Science†

*Chairman:* John Tait Davis, Ph.D., Associate Professor of Geography, Room 203, Building I, 2135 G Street NW.; Telephone: 338-0250, Extension 287 or 298

- 1 Map Reading and Photointerpretation (3)**  
Characteristics and uses of various maps and charts, geographic and grid coordinate systems, principles of aerial photointerpretation correlated with map symbolization, stereoscopic evaluation of terrain and cultural features.
- 11 Elementary Cartography (2)**  
History of mapping; introduction to fundamental concepts of topography, hydrography, surveying, map projections, map design, aerial photography,

\* Administered by the Department of Romance Languages and Literatures.

† Administered by the Department of Geography and Regional Science.

compilation, and map reproduction. Prerequisite or concurrent registration: Geodetic and Cartographic Science 1.

**12 Plane Surveying (3)**

Theory and practice in measurement of distances, angles, and elevations; traversing, leveling and simple curve layout; elements of private and public land surveys; stadia surveying, altimetry, contouring, and miscellaneous surveying problems. Prerequisite: Geodetic and Cartographic Science 11; Mathematics 21.

**13 Higher Surveying (3)**

Elements of geodetic, hydrographic, and route surveys; triangulation, base line measurement and precise traverses; geodetic leveling and precise trigonometric leveling; transition curves; field computations. Prerequisite: Geodetic and Cartographic Science 12.

**17-18 Elementary Photogrammetry (3-3)**

Fundamentals of photography, photogrammetric optics, and the geometry of aerial photographs; photographic scales and flight planning; radial line plotting, slotted templates, and mosaics; simple plotting equipment; theory and practice of multiplex mapping. Prerequisite: Geodetic and Cartographic Science 12.

**110 Map Projections (2)**

General theory of projecting from one surface to another; distortions of length, area and angles; correlation of map projection characteristics with their utilization; mathematical development and practical construction of major map projections. Prerequisite: Geodetic and Cartographic Science 11; Mathematics 22.

**111 Cartographic Techniques and Map Reproduction (2)**

Cartographic color separation, scribing; line and half-tone copy, theory of photographic processes, photographic optics, emulsions, developers, lenses; offset lithographic process, single and multicolor photo-lithographic reproduction; modern edge enhancement and photo-tone techniques. Prerequisite: Chemistry 11-12; Geodetic and Cartographic Science 11.

**155 Elementary Geodesy (3)**

Development of principles and formulas basic to theoretical and applied geodesy, with application to special problems; computation of coordinates on an ellipsoid, gravimetry, deflection of vertical and Laplace's equation. Prerequisite: Geodetic and Cartographic Science 12; Mathematics 22.

**156 Geodetic Astronomy (3)**

Development of principles and formulas for the astronomic determination of longitude, time, azimuth and latitude; observing and time recording instruments; practice in observing and computation. Prerequisite: Geodetic and Cartographic Science 155.

**160 Theory of Errors and Geodetic Adjustments (3)**

Separation of random and systematic errors, distribution of errors, Gaussian and Poisson distribution; fundamentals of matrix algebra with special emphasis on least squares adjustment of geodetic networks. Prerequisite: Geodetic and Cartographic Science 155.

**197-98 Proseminar in Geodesy, Photogrammetry, and Cartography (3-3)**

Comprehensive survey of current problems in geodesy, photogrammetry, and cartography; selected readings in contemporary literature; reports, conferences, and group discussions. Prerequisite: senior standing as a major in Geodetic and Cartographic Science.



## Geography and Regional Science

*Chairman:* John Tait Davis, Ph.D., Associate Professor of Geography, Room 203, Building I, 2135 G Street NW.; Telephone: 338-0250, Extension 287 or 298

**51 Introduction to Geography (3)**

A study of place attributes and characteristics, patterns and associations of physical and cultural earth features.

**52 World Regions (3)**

The analysis of world regional divisions, descriptions and interpretation of region complexes, evaluation of regional differences as they affect the distribution and activities of man.

**\*114 Weather and Climate (3)**

Rudimentary atmospheric physics, air mass and frontal weather analysis, regional climatology. Prerequisite: Geography 51.

**\* 115-16 Physical Geography (3-3)**

Introduction to the earth sciences: form of the earth, grids and time, weather and climate, geomorphic processes and land-forms, soils, vegetation, weather forecasting, map reading.

**124 Land Capabilities (3)**

Analysis of location; physical characteristics and economic and social contexts as they contribute to land development potential.

**125 Transportation Complexes (3)**

A study of transportation functions, principles governing the evolution of transportation systems, reciprocal relationships between transportation systems and urban and regional development.

**126 World Economies (3)**

Basic principles of economic geography illustrated by reference to differing regional economies—pastoral, agricultural, industrial; patterns of world distribution.

**141-42 Urban Settlement (3-3)**

Location, functions, and forms of cities; urban-rural relationships; the urban hierarchy; urban problems and the history of their development; the city of the future.

**146 World Political Geography (3)**

Types and distributions of political systems, the major political units and associations of the world, factors which affect relative political power, areas of conflict and arbitration.

**† 153 Western Europe (3)**

**† 155 Africa (3)**

**† 156 The Middle East (3)**

**† 161 Latin America (3)**

\* Offered off campus only.

† Regional survey.

- \*164 Communist China (3)
- \*165 Eastern and Southeastern Asia (3)
- \*166 The Soviet Union (3)

## Geology

*Chairman:* Geza Teleki, Ph.D., Professor of Geology, Room 3, Building C, 2029 G Street NW.; Telephone: 338-0250, Extension 517

- † 1-2 **Introductory Geology (3-3)**  
Lecture (2 hours), laboratory and field trip (2½ hours). A survey course covering the principles of geology. Laboratory fee, \$10 a semester.
- 3 **Introductory Geology (3)**  
A survey course covering the principles of geology. (A nonlaboratory course for Off-Campus students only.)
- 4 **Introductory Geology (3)**  
Geological periods, evolution of life on earth. (A nonlaboratory course for Off-Campus students only.)
- † 12 **Rocks, Fossils, and Minerals (3)**  
Lecture (2 hours), laboratory (3 hours). Introduction to rocks, fossils, minerals, ores, gems, and other mineral deposits. Prerequisite: Geology 1 and high school chemistry, or permission of the instructor. Laboratory fee, \$10.
- 105-6 **Fundamentals of Geophysics (3-3)**  
Survey of the theories and methods of investigation used in determining the constitution and dynamics of the earth, its oceans, and atmosphere. (It is recommended that students take Geology 3, 4: *Introductory Geology*, or the equivalent.)

## Germanic Languages and Literatures

*Chairman:* Wolfram Karl Legner, Ph.D., Professor of German, Room 405, Monroe Hall, 2115 G Street NW.; Telephone: 338-0250, Extension 282

- 1-2 **First-year German (3-3)**  
A year course: credit is not given for the first half until the second half is completed. The essentials of German grammar; translation of easy prose.
- 3-4 **Second-year German (3-3)**  
A year course: credit is not given for the first half until the second half is completed. Selections from modern German prose; continuation and
  - Regional survey.
  - † Offered on campus only.

review of grammar. Prerequisite: German 1-2 or two years of high school German.

**9-10 German Conversation and Composition (3-3)**

Aural training and oral practice.

**51-52 Introduction to German Literature (3-3)**

Prerequisite: German 4 or the equivalent.

## **Health Care Administration\***

*Program Director:* Frederick Harrell Gibbs, M.H.A., Professor of Hospital Administration, Room 11, Building EE, 816 Twenty-first Street NW.; Telephone: 338-0250, Extension 574 or 676

**153-54 Survey of Health Care Organization and Procedures (3-3)**

Lectures and discussions. (May be audited.) Primarily for students in Continuing Education in Health Care and related fields or medical care organizations who wish an over-all knowledge of organization and procedures used in hospitals, long-term care facilities such as nursing homes and homes for the aged. This is a two-semester sequence. (Not open to degree candidates in Health Care Administration.) Students wishing to take the course for graduate credit must take the Health Care Administration 203 laboratory.

## **History†**

*Chairman:* Ronald Bettes Thompson, Ph.D., Professor of European History, Room 417, Building D, 2013 G Street NW.; Telephone: 338-0250, Extension 232

**39-40 The Development of European Civilization in Its World Context (3-3)**

Primarily for freshmen. *First half:* the political, social, economic, and cultural history of the Old World from ancient times to 1715. *Second half:* from 1715 to the present.

**71-72 The Development of the Civilization of the United States (3-3)**

Primarily for sophomores. *First half:* the political, social, economic, and cultural forces of the United States in their world setting from 1492 to 1865. *Second half:* from 1865 to the present.

**145-46 History of Russia (3-3)**

An 1100-year survey of the rise and revolution of Russia. *First half:* Russia under the Old Regime, 860-1900. *Second half:* Revolution and Soviet rule, 1900-1960.

\* Administered by the Department of Government and Business, James Carlton Dockeray, Chairman.

† History 39-40 is prerequisite to courses 109 through 152 and 187 through 196; History 71-72, to courses 170 through 184; either History 39-40 or 71-72, to courses 161 through 166.



**149-50 European Diplomatic History (3-3)**

Background of the European state system and of diplomatic practices and relations since the Congress of Vienna, with emphasis on the policies and actions of the great powers and their statesmen. *First half:* to 1878. *Second half:* since 1878.

**164 South America since Independence (3)**

Development of the independent South American states in the 19th and 20th centuries.

**166 Mexico and the Caribbean since Independence (3)**

A survey of the republics of Mexico, Central America, and the Caribbean islands.

**171-72 Social History of the United States (3-3)**

Daily life, institutions, intellectual and artistic achievements of the Agrarian Era, 1607-1861; and the Urban-Industrial Era, 1861 to the present time.

**179-80 Economic History of the United States (3-3)**

(Replaces former History 174)

An analysis of the process of economic growth in the United States from Colonial times to the present. The development of various sectors in the economy such as agriculture, transportation, manufacturing, and banking will be treated and their interdependence stressed. *First half:* 1607 to 1865. *Second half:* 1865 to the present.

**181-82 Diplomatic History of the United States (3-3)**

Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; and the activities of the American secretaries of state and diplomatic agents. *First half:* to 1898. *Second half:* since 1898.

**245-46 Seminar: Russian History (3-3)**

Prerequisite: History 145-46 or the equivalent.

**281-82 Seminar: Diplomatic History of the United States (3-3)**

Prerequisite: History 181-82 or the equivalent.

## **International Affairs**

*Chairman:* Hiram Miller Stout, Ph.D., Professor of International Affairs, Room 200A, Hall of Government, 710 Twenty-first Street NW.; Telephone: 338-0250, Extension 661 or 607

\*Anthropology 263, *Culture Contact and Change* (3 or 4)

\*Economics 251, *Economic Development* (3 or 4)

\*History 246, *Seminar: Russian History* (3 or 4)

International Affairs 99-100, *Research* (3-3)

International Affairs 160, *Insurgency: Communist Doctrine and Its Application* (3)

\* Four semester hours of credit allowed only for degree candidates in the Master of Science in International Affairs curricula in the War Colleges.

- \*International Affairs 260, *Fundamentals of National Power* (3)
- \*International Affairs 261, *International and United States Foreign Policy* (3)
- \*International Affairs 262, *National Security Policy of the United States* (3)
- \*International Affairs 297, *Readings in International Affairs* (1, 2, or 3)
- \*International Affairs 299-300, *Thesis* (3-3)
- †Political Science 172, *Organization and Function of the United Nations* (3 or 4)
- †Political Science 212, *Seminar: Comparative Government and Politics* (3 or 4)
- †Political Science 283, *Topics in International Law* (3 or 4)
- †Political Science 285, *Diplomacy Since World War II* (3 or 4)

## Italian†

*Chairman:* William Graham Clubb, Ph.D., Professor of French, Room 10, Building A, 2026 G Street NW.; Telephone: 338-0250, Extension 425 or 426

### 1-2 First-year Italian (3-3)

A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern Italian prose.

### 3-4 Second-year Italian (3-3)

A year course: credit is not given for the first half until the second half is completed. Conversation, grammar, composition, reading in modern Italian prose, introduction to Italian civilization. Prerequisite: Italian 1-2 or two years of high school Italian.

## Journalism

*Acting Chairman:* Robert Crumpton Willson, A.B., Associate Professor of Journalism, Room 406, Library, 2023 G Street NW.; Telephone: 338-0250, Extension 379 or 498

### 145 Principles and Problems of Public Relations (3)

Principles, problems, and ethics of public relations for government agencies, commercial establishments, educational and other public institutions. Case histories of successful programs.

\* War Colleges curricula only.

† Four semester hours of credit allowed only for degree candidates in the Master of Science in International Affairs curricula in the War Colleges.

‡ Administered by the Department of Romance Languages and Literatures.

## Latin American Civilization—Special Program

*Program Director:* Robert Carter Burns, A.M., Staff Associate (Conference Seminars), Room 27, Building F, 706-712 Twentieth Street NW.; Telephone: 965-2350

*Faculty Consultants:* William Columbus Davis, Ph.D., Professor of Latin American History; Charles Edward Galbreath, Ph.D., Professor of International Economics; Wood Gray, Ph.D., Professor of American History; Wolfgang Herbert Kraus, Dr. Jur., S.J.D., Professor of Political Science; George Elbert McSpadden, Ph.D., Professor of Romance Languages; Hiram Miller Stout, Ph.D., Professor of International Affairs

### 101 Latin American Civilization (3)

A three-week, University-conducted study tour of Central America, effecting a broad synthesis of its history, politics, economy, geography, language, and literature in order to achieve an understanding of contemporary problems and assess national attitudes in the light of world relations. On-the-spot seminars, guest lectures at universities, instructional visits to government offices, first-hand observation of each country and the operation of its economy, comparisons and contrasts among the countries of the area. Tour conducted in the summer of 1965 by George Elbert McSpadden.

## Mathematics\*

*Chairman:* Nels David Nelson, Ph.D., Professor of Mathematics, Room 422, Monroe Hall, 2115 G Street NW.; Telephone: 338-0250, Extension 338

### 3 College Algebra (3)

Exponents and logarithms; linear equations; complex numbers; quadratic equations; introduction to theory of equations; mathematical induction and the binomial theorem; permutations, combinations, and probability; determinants; progressions. Prerequisite: one year each of high school algebra and high school geometry.

### 6 Plane Trigonometry (3)

Prerequisite: two years of high school algebra and one year of high school geometry, or Mathematics 3 (or concurrent registration therefor).

### 9 General Mathematics I (3)

For those students in the School of Education or others electing Mathematics 9 and 10 as a terminal sequence in mathematics. Propositional logic and truth values; the number system, number bases, arithmetical computation; algebraic functions; topics from plane geometry. Prerequisite: two years of high school mathematics. Not open to students who have had former Mathematics 2.

### 10 General Mathematics II (3)

An introduction to matrices and vector spaces; non-Euclidean geometry; introduction to concepts of the calculus. Prerequisite: Mathematics 9 or former 2.

\* No courses numbered 1 to 100 are available for college credit if the student's previous training in mathematics meets the prerequisite for a higher numbered course.

Graduate credit may not be given for courses numbered 101 to 200 without the permission of the Chairman of the department.

## 102 MATHEMATICS



- 15 **Finite Mathematics I (3)**  
Truth value connectives and switching circuits, partitions and counting, probability theory. Prerequisite: two years of high school mathematics.
- 16 **Finite Mathematics II (3)**  
Vectors and matrices, mathematics of finance and accounting, linear programming, introduction to game theory. Prerequisite: Mathematics 15.
- 21 **Calculus I (3)**  
Elementary concepts of analytic geometry. Differentiation and integration of algebraic functions with applications. Prerequisite: Mathematics 3 and 6; or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry; or the equivalent.
- 22 **Calculus II (3)**  
Differentiation and integration of transcendental functions and applications, topics in analytic geometry, techniques of integration. Prerequisite: Mathematics 21.
- 23 **Calculus III (3)**  
Vector concepts, improper integrals, polar coordinates, and infinite series. Prerequisite: Mathematics 22.
- \*24 **Calculus IV (3)**  
Multiple integration and partial differentiation with applications, vectors and solid geometry, differential equations. Prerequisite: Mathematics 23.
- 110 **Mathematics for Meteorologists (3)**
- 111 **Mathematics for Engineers and Physicists I (3)**  
Differential equations, linear algebra.
- 112 **Mathematics for Engineers and Physicists II (3)**  
Fourier series, Laplace transformation, partial differential equations. Prerequisite: Mathematics 111 or former 132.
- 122 **Introduction to Abstract Algebra (3)**
- 124 **Introduction to Matrix Theory (3)**  
Elementary theory of finite vector spaces, determinants, equivalence, matrices with polynomial elements, similarity of matrices.
- 130 **Introduction to Finite Differences (3)**  
Finite integration and applications, interpolation (approximate integration), and difference equations including Seliwanoff's treatment of the homogenous equation.
- 139 **Advanced Calculus I (3)**  
Limits, continuity, real number system, mean value theorems, partial differentiation, implicit function theorems, transformations, and mappings.
- 140 **Advanced Calculus II (3)**  
Vector fields, multiple integrals, line and surface integrals, point set theory, theory of integration, improper integrals. Prerequisite: Mathematics 139.
- 153 **Introduction to Numerical Analysis (3)**  
Digital computers, accuracy, interpolation, quadrature, numerical solution

\* Mathematics 24 or former 31 is prerequisite to all courses numbered 101-200. Exception to this regulation may be made for Mathematics 122 and 124. Students anticipating a substantial concentration in mathematics should consult with the Department about early completion of these courses.

of equations including differential equations. Prerequisite: Mathematics 111 or former 132.

**117 Vector Analysis (3)**

**172 Tensor Analysis (3)**

Review of vectors and matrices, transformation groups, curvilinear coordinates, covariant and contravariant tensors, derivatives and integrability conditions. Prerequisite: Mathematics 171.

## **Oceanography\***

*Chairman:* John Tait Davis, Ph.D., Associate Professor of Geography, Room 203, Building I, 2135 G Street NW.; Telephone: 338-0250, Extension 287 or 298

**101-2 Introductory Oceanography (3-3)**

An introduction to oceanography: general characteristics of ocean basins, properties of sea water, thermal structure, waves, currents, submarine geology, tides, plant and fish ecology, new developments in oceanography based on a review of the current literature. Prerequisite: Chemistry 11-12 and Physics 1-2.

**109 Tides (3)**

A survey of tidal theory and analysis: equilibrium theory, dynamic theory, tidal analysis (including the Fourier, Coast Survey, and Doodson methods), cotidal charts, tidal characteristics from harmonic constants, tidal planes, and recent developments in analyses and prediction. Prerequisite: Oceanography 101-2 or permission of the instructor.

## **Philosophy**

*Acting Chairman:* Richard Harold Schlagel, Ph.D., Associate Professor of Philosophy, Room 30, Building N, 718 Twentieth-first Street NW.; Telephone: 338-0250, Extension 538

**51-52 Introduction to Philosophy (3-3)**

A critical introduction to the problems of modern philosophy in relation to scientific and social developments since the Renaissance. This course is not merely intended as an introduction to those courses in philosophy which follow but is a unit complete in itself for those students in other departments interested in the problems of philosophy relevant to modern thought.

**121-22 Logic and Scientific Method (3-3)**

*First half:* the elementary principles of valid reasoning with emphasis on developing skill in using these principles, introductory consideration of symbolic logic, the nature of a formal system. *Second half:* general

\* Administered by the Department of Geography and Regional Science.

analysis of the methods of investigation and reasoning used in the natural and social sciences, procedures and requirements of definition, classification and sorting, analogical and inductive inference, causal determination, the nature and function of hypothesis, measurement, principles of the theory of probability.

## Physical Education

*Acting Chairman for men:* William Henry Myers, A.B., A.M. in Ed., Professor of Physical Education for Men, Room 11, Building S, 2025 H Street NW.; Telephone: 338-0250, Extension 301

*Chairman for women:* Loretta May Stallings, A.M., Professor of Physical Education for Women, Room 20, Building H, 716 Twentieth Street NW.; Telephone: 338-0250, Extension 341 or 678

**\*1-2 Freshman Physical Education (1-1)**

Physical Education fee, \$4.50 a semester.

**\* 11-12 Sophomore Physical Education (1-1)**

Physical Education fee, \$4.50 a semester.

**101 Physical Education in the Elementary School (3)**

Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the various age levels in elementary school, playground, and settlement house programs. Methods and materials of tumbling, games, dance, and self-testing activities.

## Physics

*Chairman:* Herman Hedberg Hobbs, Ph.D., Professor of Physics, Room 201, Samson Hall, 2036 H Street NW.; Telephone: 338-0250, Extension 361

**† 1-2 General Physics (4-4)**

Lecture (2 hours), recitation (1 hour), laboratory (2½ hours). Principal phenomena of classical and modern physics. *First half:* a study in depth of selected topics in classical physics which form a foundation for and lead to an understanding of modern physics. *Second half:* the fundamental concepts of atomic, nuclear, solid state, and related fields of modern physics. Prerequisite: two years of college preparatory mathematics or concurrent registration in Mathematics 6. Material fee, \$11 a semester.

**† 31-32 Introduction to Theoretical Physics (2-2)**

The theoretical structure of physics with emphasis on the appropriate analytical techniques. Prerequisite: one year of calculus and Physics 1-2.

\* Offered on campus only. The Physical Education fee is required for registration in one or more of the activity courses.

† Offered on campus only.



**\*51-52 Introduction to Experimental Physics (2-2)**

Experiments and lectures on the basic phenomena of physics and techniques of experimentation. Designed to show the phenomena that are the basis of the theoretical aspect of physics and to introduce the student to experimental techniques necessary for further work in natural sciences. Prerequisite: Physics 1-2 and one year of calculus. Material fee, \$11 a semester.

## Political Science

*Chairman:* Hugh Linus LeBlanc, Ph.D., Professor of Political Science, Room 403, Hall of Government, 710 Twenty-first Street, NW.; Telephone: 338-0250, Extension 684

**1 Introduction to Government (3)**

Basic principles and problems of political life: theories, forms, and processes of government in the United States and foreign countries. Attention is also given to international relations.

**† 9-10 Government of the United States (3-3)**

*First half:* structure, powers, and operation of the Federal Government: Congress, the President, and the Supreme Court; elections, political parties, and pressure groups. *Second half:* state and local governments: civil rights; major functions of government at federal, state, and local levels.

**111 Introduction to Comparative Government and Politics (3)**

Government and politics of the principal constitutional democracies of Western Europe: Great Britain and France.

**112 Introduction to Comparative Government and Politics (3)**

Government and politics of the principal political systems of Central and Eastern Europe: Germany and the Soviet Union.

**121-22 The Constitution of the United States (3-3)**

Judicial power of federal courts in constitutional interpretation. *First half:* emphasis on separation of powers, federal-state relationships, and taxation. *Second half:* emphasis on constitutional protection of civil rights.

**145 Political Parties and Politics (3)**

Organization and operations of political parties in the United States: major and minor parties, bosses and corruption, nominations and elections, influence on President and Congress.

**146 Political Pressures and Public Reactions (3)**

Public opinion, special interest lobbies, and pressure groups as they operate on government to influence public policy.

**151-52 Public Administration (3-3)**

Introductory survey of the theory and practice of governmental administration and its relation to politics, legislation, the courts, and nongovernmental organizations and interests.

\* Offered on campus only.

† Prerequisite to all courses from 107-200.

- 171 International Politics (3)**  
Basic forces underlying the conduct of international relations and the formation of foreign policy; power politics, imperialism, collective security, and international cooperation.
- 172 Organization and Function of the United Nations (3)**  
(Formerly International Organization: the United Nations)  
Development and current operation of international organization within the system of sovereign states with emphasis on the United Nations.
- 181-82 Survey of Public International Law and Organization (3-3)**  
(Formerly International Law)  
Survey of the public law of nations with emphasis on the law of peace. Neutrality and the so-called law of war receive attention in the second semester.
- 190 Politics of Middle and Southern Africa (3)**  
(Political Science 190, 191, and 192 replace former 191 and 192)  
The political life of the states and dependent territories of non-Mediterranean Africa, including the upper Nile valley and the Horn of Africa. Special attention to the specifically regional aspect of the foreign policies of these countries.
- 191 Governments and Politics of the Middle East (3)**  
(Political Science 190, 191, and 192 replace former 191 and 192)  
Domestic and international politics of the Eastern Arab States and Principalities, Turkey, Iran, and Israel. Attention will be given to their roles in regional and international organizations.
- 192 Governments and Politics of North Africa (3)**  
(Political Science 190, 191, and 192 replace former 191 and 192)  
Domestic and international politics of Algeria, Tunisia, Morocco, Libya, Egypt, and Sudan. Attention will be given to their relations with the states of the Middle East.
- 193 Governments and Politics of South and Southeast Asia (3)**  
(Political Science 193 and 194 replace former 194)  
Domestic and international politics of the major states in the area with particular reference to India.
- 194 Governments of China and Japan (3)**  
(Political Science 193 and 194 replace former 194)  
Institutions and processes of government of contemporary China and Japan, with some historical background. Special attention will be paid to ideological forces.
- 212 Seminar: Comparative Government and Politics (3)**  
Selected topics and problems on comparative political and administrative institutions and the politics of modern constitutional governments and dictatorships. Each semester is devoted to a selected country or significant institutional or policy problem. Attention will be directed to questions of method.
- 271-72 Problems in International Organization (3-3)**  
Reading and research as a basis for analyzing developments in general and regional international organizations.
- \*283 Topics in International Law (3)**  
A consideration of theory, problems, and cases in the public law of nations including the law of peace and the law of war.

\* War Colleges' curricula only.

**\*285 Diplomacy Since World War II (3)**

Recent changes in diplomatic procedures and objectives as compared with those of earlier periods.

**299-300 Thesis (3-3)**

## **Psychology**

*Chairman:* John Lincoln Finan, Ph.D., Professor of Psychology, Room 426, Monroe Hall, 2115 G Street NW.; Telephone: 338-0250, Extension 283

**† 1 General Psychology (3)**

The fundamental principles underlying human behavior.

**8 Psychology of Motivation and Personality (3)**

(Formerly Psychology of Adjustment)

Processes involved in the total adjustment of the individual with emphasis on social environment; development in the individual of adjustment techniques.

**22 Introduction to Educational Psychology (3)**

Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training.

**29 Psychology of Childhood (3)**

A genetic approach to the study of the child. Special emphasis is placed on the socialization process, learning, and the child's view of the world.

**101 Abnormal Psychology (3)**

The causes, diagnosis, treatment, and prevention of the various types of maladjustments and mental disorders. Prerequisite: 6 credits in psychology, or 3 credits in psychology and 6 credits in a biological science.

**112 Psychology of Adolescence (3)**

Psychological characteristics and problems peculiar to adolescence, with emphasis on applications of psychology to solution of such problems.

**115 Psychology of Language and Communication (3)**

An introduction to psycho-linguistics and verbal behavior. Information theory, the measurement of meaning, cultural and linguistic structures in the perception and learning of language.

**118 Physiological Psychology (3)**

Basic structure and functions of sensory systems, motor systems, central nervous system, autonomic nervous system, and endocrine system with special emphasis upon the relations between physiological functioning and behavior.

**121 Psychology of Learning (3)**

Current learning theories and issues.

\* War Colleges' curricula only.

† Psychology 1 is prerequisite to all other courses in Psychology.



- 125 Mental Hygiene (3)**  
A course for teachers in the application of psychological principles to classroom procedures for purposes of assisting the teacher to recognize and deal with early symptoms of maladjustment.
- 129 Motivational Factors in Personality (3)**  
A survey of basic principles and assessment techniques, with emphasis on applications to counseling.
- 131 Psychological Tests (3)**  
A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, \$7.
- 144 Personnel and Industrial Psychology (3)**  
(Formerly Personnel Psychology)  
Psychological concepts and methods applied to problems of personnel management, human engineering, employee motivation, and productivity.
- 145 Principles of Human Relations (3)**  
Survey of the psychological principles involved in dealing with individuals and groups.
- 149 Human Relations in Management (3)**  
A consideration of the management process in terms of human behavior, with emphasis upon group processes, leadership, social interaction, motivation, and problem-solving techniques. Material fee, \$5.
- 151 Social Psychology (3)**  
The social foundations of attitudes and behavior: cognition, motivation, role-behavior, communication, small-group processes, racial attitudes, nationalism, and war.
- 153 Psychological Factors in Delinquency (3)**  
Historical and sociological factors in delinquency; historical attitudes toward the offender, theory, and practice; patterns of failure; early preventive measures; research in delinquency prediction; rehabilitation as team work by parents, school, community, church, and (where necessary) the institution.
- 156 Psychology of Attitudes and Public Opinion (3)**  
(Formerly Psychology of Propaganda and Public Opinion)  
The psychology of opinion formation, the measurement of opinion, the social determinants of attitudes, the psychological processes in propaganda, the bases of receptivity of propaganda, psychological warfare.
- 209 Seminar: Psychology of Motivation (3)**  
A consideration of various theoretical approaches to the psychology of motivation and systematic concepts and experimental findings deriving from each approach.
- 231 Development of Psychometric Instruments (3)**  
The quantitative techniques and principles used in the construction, standardization, and evaluation of personality and ability measures for both research and practice; the quantification of human judgment for measurement purposes. Prerequisite: a course in tests and measurements and an elementary course in statistics.
- 245 Seminar: Organizational Behavior (3)**  
(Formerly Employee Motivation and Morale)  
An analysis of organizational behavior, especially with regard to motivation and productivity. The implications of recent research on employee

attitudes, the primary group, the effects of various patterns of supervisory leadership, the role of formal and informal organization, and job design.

**246 Seminar: Personnel Measurement Techniques (3)**

Detailed consideration of the techniques of personnel selection and performance evaluation. The use of employment tests, personal data, assessment interviews, and performance ratings.

**254 Seminar: Experimental Social Psychology (3)**

(Formerly Seminar: Group Dynamics)

The experimental study of small groups; autocratic and democratic group climates; interaction process analysis; Lewin's field-theoretical approach to individual and group processes.

**255 Seminar: Techniques of Opinion and Attitude Measurements (3)**

Methods of attitude measurement (interviews, questionnaires, scales, polls) as currently used by private and governmental investigators. The place of attitude studies in schools, industry, government, etc.

**\*264 Sensitivity Training: Human Relations Laboratory Course (3)**

A sensitivity learning experience in human relations. The course is built around an unstructured group experience with opportunities for individual feedback, experimentation, and practice. The goal of the course is the development of self-insight, situational sensitivity, and diagnostic skills in human relations. Prerequisite: 9 semester hours in psychology or sociology.

**299-300 Thesis (3-3)**

## **Public Administration†**

*Acting Program Director: Harry Robert Page, M.B.A., Assistant Professor of Business Administration, Room 201, Hall of Government, 710 Twenty-first Street NW.; Telephone: 338-0250, Extension 507*

**199-200 Research (3-3)**

**213 Administration in Government (2 or 3)**

A critical analysis of federal administrative organizations, their achievements and pathologies. The roles of Congress, the Presidency, the Courts, interest groups, political parties, and the public in the administrative process are studied with special attention to centripetal and centrifugal forces at work.

**221 Management in the Executive Branch (3)**

Analysis of the application of organizational theories and practices in the Executive Branch of the Federal Government with particular emphasis on staff responsibilities and relationships and internal organization and control. Special problem areas are examined.

**232 Federal Personnel Procedures (3)**

Study of such personnel functions as recruitment, selection, placement,

\* This course offered at Airlie House only.

† Administered by the Department of Government and Business, James Carlton Dockeray, Chairman.

promotion, supervision, evaluation, classification, and training. Practical problems of personnel administration.

- 233 **Seminar: Manpower Development and Utilization (3)**  
Research projects and case studies in ways and means of increasing employee potential, use of training programs, executive development, incentive systems.
- 251 **Governmental Budgeting (2 or 3)**  
The role of budgeting in management; the principles and practices of budgetary formulation and administration.
- 252 **Seminar: Planning and Programming (2 or 3)**  
The administrative processes of planning and programming in government, relationships to budgeting, planning and programming as a basis of managerial control, evaluation of accomplishments.
- 260 **Seminar: Policy Formulation and Administration (3)**  
Development of agency goals and objectives and administration of agency policies; influence of individuals upon them; factors involving informal organization and role of executive in furthering administrative policy.
- 261 **The Public and the Administrator (3)**  
The nature of the public interest, ways of determining public opinion, public opinion and the decision-making process, theories and methods of working with the public, interest groups, public relations and information programs.
- 272 **Seminar: Public Personnel Administration (3)**  
Advanced directed reading in specific areas of public personnel administration.
- 298 **Case Studies in Public Administration (3)**  
Analysis and discussion of problems in public management by use of the case method.
- 299 **Thesis Seminar (3)**  
An examination of thesis standards, research philosophy, and methodology.
- 300 **Thesis (3)**

## Religion

*Chairman:* Robert Gean Jones, B.D., Ph.D., Professor of Religion, Room 21, Building O, 2106 G Street NW.; Telephone: 338-0250, Extension 602 or 279

- 9 **The Old Testament (3)**  
A historical and literary approach to the study of the books of the Old Testament with special consideration given to the development of religious ideas, institutions, and outstanding personalities.
- 10 **The New Testament (3)**  
A study of the literature of the New Testament from the standpoint of occasion, purpose, dominant ideas, and permanent values. Special em-



phasis on the approach, the structure, and the significance of the Gospels and Epistles.

**59-60 History of Religions (3-3)**

*First half:* primitive and ancient national religions: Confucianism, Taoism, Buddhism, Hinduism, and Shintoism—their historical setting, founders, and development of religious thought and culture. *Second half:* Zoroastrianism, Judaism, Christianity, and Islam—analysis of their origin, evolution, and contemporary status.

**131 History of Christianity to the Reformation (3)**

The rise and expansion of Christianity, the development of Christian thought, the evolution of church organization and worship, the Renaissance and pre-Reformation dissent.

**132 History of Modern Christianity (3)**

The origin and development of Protestantism; the Roman Catholic revival; the status of the Eastern churches; doctrines, worship, expansion, church and state, and relation to modern thought and life.

**191 Christian Education in the Church (3)**

Principles of religious education; factors conditioning Christian growth; functions of family, church, community, and state.

**192 Christian Education in the Church (3)**

The unified program of the church; worship, study, and service; developing lay educational leadership; housing and equipment; curriculum construction; evaluation of materials; lesson planning and teaching methods.

## Secretarial Studies

*Program Director:* Margaret Ann Kiley, Ed.D., Assistant Professor of Secretarial Studies, Room 306, Monroe Hall, 2115 G Street NW.; Telephone: 338-0250, Extension 447

**1 Elementary Typewriting (3)**

Fundamental techniques of typewriting, basic styles of business letters, introduction to tabulation, and preparation of general office forms. Laboratory fee, \$7.

**2 Intermediate Typewriting (3)**

The business letter and its arrangement, advanced tabulation, manuscript typing, office forms, stencil cutting, and legal documents. Prerequisite: Secretarial Studies I or the equivalent; ability to type accurately at 30 words a minute. Laboratory fee, \$7.

**10 Notehand (No academic credit)**

A personal-use shorthand with integrated instruction in the processes and procedures for taking notes from listening and from reading. Fee, \$40.

**11 Elementary Shorthand and Transcription (3)**

A study of the principles of Gregg shorthand correlated with dictation and transcription. Minimum shorthand speed of 60 words a minute attained. Laboratory fee, \$3.

**112 SECRETARIAL STUDIES**

- 12 **Intermediate Shorthand and Transcription (3)**  
Review of the principles of Gregg shorthand. Dictation and transcription on general and specialized business subjects. *Minimum* shorthand speed of 80 words a minute attained. Prerequisite: Secretarial Studies 11 or the equivalent; ability to take dictation at 60 words a minute. Laboratory fee, \$5.
- 13 **Medical Shorthand, Typewriting, and Transcription (3)**  
Dictation and transcription of specially chosen material selected from case histories, medical correspondence, and hospital records. Experience in the use of dictation machines in transcription. Prerequisite: Secretarial Studies 12 or the equivalent; ability to take dictation at 80 words a minute. Laboratory fee, \$5.
- 15 **Advanced Shorthand, Typewriting, and Transcription (3)**  
Dictation and transcription involving vocabularies in specific businesses. *Minimum* shorthand speed of 100 words a minute attained. Prerequisite: Secretarial Studies 12 or the equivalent; ability to take dictation at 80 words a minute. Laboratory fee, \$5.
- 16 **Secretarial Shorthand, Typewriting, and Transcription (3)**  
Dictation and transcription involving vocabularies used in business, government, and the professions. *Minimum* shorthand speed of 120 words a minute attained. Prerequisite: Secretarial Studies 15 or the equivalent; ability to take dictation at 100 words a minute. Laboratory fee, \$5.
- 17 **Introduction to Legal Terminology and Law (3)**  
An introduction to American law, its sources and divisions; the setup of the courts; court procedures; law theory and practice. A study of vocabulary peculiar to the law.
- 18 **Legal Shorthand, Typewriting, and Transcription (3)**  
Dictation and transcription of material with a wide variety of legal vocabulary. Experience in preparation of legal documents and use of legal forms. *Minimum* shorthand speed of 120 words a minute attained. Prerequisite: Secretarial Studies 15 or the equivalent; ability to take dictation at 100 words a minute. Laboratory fee, \$5.
- 19-20 **Introduction to Medical Terminology and Medicine (3-3)**  
A basic study of the complexity of the medical language is undertaken through analysis of the word elements. Diseases and injuries are explored with strong emphasis on terminology, symptomatology, and etiology. A study of medical facilities and their interrelationship is included.
- 22 **Medical Secretarial Internship (4)**
- 51 **Correspondence and Communication (3)**  
Development of effective correspondence and communication through letter writing and business reports. Study of the influence of human relations on communication media. Analysis of current business literature.
- 54 **Secretarial Practice (3)**  
A thorough study of secretarial responsibilities, problems, and procedures. Experience in the use of secretarial equipment, filing systems, and office management. The development of secretarial personality, office relationships, and professional ethics.

## Slavic Languages and Literatures\*

*Chairman:* Helen Bates Yakobson, B.S., Associate Professor of Russian, Room 2, Building X, 2107 H Street NW.; Telephone: 338-0250, Extension 275 or 496

- 1-2 **First-year Russian (3-3)**  
A year course: credit is not given for the first half until the second half is completed. A beginners' course in fundamentals of grammar and pronunciation with graded reading, oral drill, and written practice. Listening comprehension and oral practice.
- † 1S-2S **Scientific Russian for Beginners (3-3)**  
An introduction to the essentials of Russian grammar and reading of modern scientific texts.
- 3-4 **Second-year Russian (3-3)**  
A year course: credit is not given for the first half until the second half is completed. Systematic review of grammar. Study of special problems of Russian morphology and syntax. Oral and written reports on assigned topics. Prerequisite: Russian 1-2 or two years of high school Russian.
- 9-10 **Russian Conversation and Composition (3-3)**  
Listening comprehension; oral and written practice. Prerequisite: Russian 3-4 or permission of the instructor.
- 91-92 **Introduction to Russian Literature (3-3)**  
A survey of Russian literature, in translation, from the earliest periods through the literary masterpieces of the 19th and early 20th centuries. Lecture, recitation, and discussion—in English.
- 93-94 **Introduction to Slavic (non-Russian) Literature (3-3)**  
A survey of non-Russian Slavic literatures, in translation, from the early periods to the present, with emphasis on the contemporary scene. Lecture, recitation, and discussion—in English.
- 101-2 **Readings in Modern Russian (3-3)**  
Representative reading and translation of Soviet periodicals and selected texts in social sciences. Study of current political terminology, abbreviations, and Soviet idiom.
- 103-4 **Scientific Russian (3-3)**  
Readings in the major fields of Russian contemporary scientific literature.
- 161-62 **Russian Culture (3-3)**  
A survey of Russian cultural heritage from the origins of ancient Russia to the present—in English. Lecture, recitation, discussion, and individual reports on assigned topics.

\* Administered by the Department of Slavic and Oriental Languages and Literatures

† This is a special course. It cannot serve as a prerequisite to any advanced course in Slavic and Oriental Languages and Literatures.



## Sociology

*Acting Chairman:* Richard Walton Stephens, Ph.D., Professor of Sociology, Room 9, Building X, 2107 H Street NW.; Telephone: 338-0250, Extension 387 or 530

\* 1-2 **Introductory Sociology (3-3)**

(Formerly Sociology 2)

Development of culture and personality, the impact of groups and institutions on man's social behavior. A survey of the fields within sociology.

41 **American Social Problems (3)**

Analysis of major social problems confronting the United States. Factors producing social problems; their nature and treatment.

126 **Urban Sociology (3)**

The place of the city in the larger society; growth of the city, problems of urban living, group life, personality, urban housing, and city planning. Includes consideration of suburban development.

127 **Population Problems (3)**

(Formerly Sociology 241)

Composition of populations, trends in population growth and population pressure, factors producing population movements, effects of migration, population policies: eugenics and birth control.

129 **Race and Minority Groups (3)**

Analysis of the relationships between dominant and minority groups in society, particularly in the United States; nature and range of problems; analysis of the phenomenon of prejudice.

130 **Social Stratification: Class and Status (3)**

(Formerly Anthropology 161)

Nature of class structure patterns of status, prestige relations in American society, differential class behavior, analysis of comparative social structure and social mobility.

131 **Social Institutions (3)**

Functional analysis of basic social institutions: family, education, religion, economy, and state in the structure of American Society.

132 **Courtship and Marriage (3)**

Dating and courtship as social processes, reasons for marriage, marriage laws, mate selection, factors in marital adjustment; prediction and counseling.

135 **Juvenile Delinquency (3)**

Factors producing delinquency, juvenile detention, the juvenile court, training schools, treatment of offenders.

136 **Criminology (3)**

Nature and distribution of crime, police and court systems, prisons and reformatories; treatment and prevention of crime.

141-42 **Social Research Methods (3-3)**

*First half:* introduction to the scientific method in the development of social theory and the solution to social problems. Research designs, in-

\* Sociology 1-2 is prerequisite to all other courses in Sociology.

cluding case studies, experiments, and surveys. *Second half:* continuation—concentrating on the translation of concepts into indices and the analysis and interpretation of research results, measurement, scales and scoring, hypothesis testing.

## Spanish\*

*Chairman:* William Graham Clubb, Ph.D., Professor of French, Room 10, Building A, 2026 G Street NW.; Telephone: 338-0250, Extension 425 or 426

### 1-2 First-year Spanish (3-3)

A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern Spanish prose.

### 3-4 Second-year Spanish (3-3)

A year course: credit is not given for the first half until the second half is completed. Conversation, grammar, composition, reading of modern Spanish prose, introduction to Hispanic civilization. Prerequisite: Spanish 1-2, or two years of high school Spanish.

### 51-52 Survey of Spanish Literature and Civilization (3-3)

The social, artistic, and cultural background of Spanish civilization. Lectures, readings, recitations, and informal discussion.

## Speech and Drama

*Chairman:* Lubin Poe Leggett, A.M., Ed.D., Depew Professor of Speech, Room 4, Lisner Auditorium, 730 Twenty-first Street NW.; Telephone: 338-0250, Extension 295

### 1 Effective Speaking (3)

Preparation and delivery of extempore speeches, developing confidence and poise, body and voice control; selecting and organizing material. Recording fee, \$2.

### 2 Persuasive Speaking (3)

A continuation of Speech 1, which is prerequisite, with emphasis on speech composition and elementary principles of persuasion.

### 11 Voice and Diction (3)

Developing ease, naturalness, and clarity in the speaking voice. Analysis of individual voices through recordings. Phonetic approach to the study of the sounds of English, the standards of speech. Class instruction in the problems of rate, volume, pitch, and quality. Recording fee, \$4.

### † 111 Effective Speech Communication (3)

The tools and principles of effective speech communication, including

\* Administered by the Department of Romance Languages and Literatures.

† This course can be adapted to the needs of a specific group.

practice in the organization, delivery, and the evaluation of presentations commonly encountered by professional personnel. Not open to speech majors.

**121 Group Discussion and Conference Leadership (3)**

The process of thinking and problem solving in committees and small groups, and the methods of leading discussions and conferences. Prerequisite: 6 hours of speech or the permission of the instructor.

**169 Creative Dramatics (3)**

A study of creative dramatics and its use as a learning tool.

**170 Children's Theater (3)**

Theory and practice in creating and producing plays for children.

## Statistics

*Chairman:* Solomon Kullback, Ph.D., Professor of Statistics, Room 401, Hall of Government, 710 Twenty-first Street NW.; Telephone: 338-0250, Extension 296

**\*51 Introduction to Business and Economic Statistics (3)**

Lecture (2 hours), laboratory (2 hours). Survey of elementary principles and procedures for presenting, analyzing, and interpreting statistical data; consideration of characteristic values; measures of variability, sampling processes, index numbers, time series analysis, and simple correlation. Prerequisite: one entrance unit in algebra. Laboratory fee, \$9.

**†52 Mathematics of Finance (3)**

Lecture (3 hours). Interest and discount, annuities, valuation of stocks and bonds, sinking funds, amortization, valuation of depletable assets, depreciation. Prerequisite: one entrance unit in algebra.

**†91 Principles of Statistical Methods (3)**

Lecture (2 hours), laboratory (2 hours). Variates and attributes, averages and dispersion, frequency distributions and their characteristics, regression and correlation, statistical decision processes. Prerequisite: one entrance unit in algebra. Laboratory fee, \$9.

**101-2 Basic Principles of Statistical Methods (2 or 3-3)**

Variables and attributes, averages and dispersion, elementary principles of sampling, introduction to the making of statistical decisions. (This course is offered both on and off campus.)

**104 Statistics in Psychology and Education (3)**

Lecture (2 hours), laboratory (2 hours). Introductory study of statistical techniques necessary for application of statistics in research problems in psychology and education.

**110 Quality Control Techniques (3)**

Applications of probability and distribution theory to industrial control problems; use of quality and control charts; acceptance sampling plans;

\* Statistics 51 is offered only on campus. However, Statistics 101-2: *Basic Principles of Statistical Methods* (2 or 3-3), which is offered off campus, may be substituted.

† Offered on campus only.



estimation of lot and process characteristics. Prerequisite: Statistics 51 or permission of instructor.

**111 Business and Economic Statistics I (3)**

Statistical processes as related to the problems of business and economic research with emphasis on decision making under conditions of uncertainty. Topics include averages, dispersion, analysis of variance, correlation, quality control, and index numbers. Prerequisite: Statistics 51 or permission of instructor.

**112 Business and Economic Statistics II (3)**

Specific problems of business and economics with statistics as a tool of analysis. Introduction to principles and use of linear programming, game theory and queueing theory techniques. Study of various economic relationships, including demand, supply, cost and price functions. Prerequisite: Statistics 111 or equivalent.

**\* 117 Analysis of Variance (3)**

Lecture (2 hours), laboratory (2 hours). The analysis of variance to segregate factors producing significant variation; a method to estimate experimental error, multiple classifications, Latin Square, Greco-Latin Square, factorials; an introduction to model theory. Prerequisite: Statistics 91. Laboratory fee, \$9.

**\* 118 Correlation and Chi-square Test (3)**

Lecture (2 hours), laboratory (2 hours). Regression and correlation theory: simple, partial, and multiple; nonparametric methods; analysis of covariance; contingency table analysis; tests of goodness of fit. Prerequisite: Statistics 91. Laboratory fee, \$9.

**207-8 Operations Analysis (3-3)**

Basic concepts and techniques of operations analysis as applied to problems in business management and economic research. An introduction to the processes of linear programming, game theory, and queueing theory.

**271-72 Statistical Information Theory (3-3)**

A year course: credit is not given for the first half until the second half is completed. Basic concepts, definitions, and formulas of information theory; their significance and general properties. Shannon's coding theorem, channel capacity, and transmission of information; inequalities of information theory and sufficiency; applications to statistical problems of discrimination and hypothesis testing. Asymptotic distribution theory of information; analysis of contingency tables; loss of information due to grouping and sequential analysis; comparison of experiments.

\* Offered on campus only.

## THE UNIVERSITY

### HISTORY

THE GEORGE WASHINGTON UNIVERSITY had its beginning in 1821 as The Columbian College in the District of Columbia. The name of the institution was changed in 1873 to Columbian University and in 1904 to The George Washington University. The debt of the University to George Washington whose name it bears is an intangible one.

George Washington, as President and as private citizen, had urgently insisted upon the establishment of a National University in the Federal City. There he hoped that, while being instructed in the arts and sciences, students from all parts of the country would acquire the habits of good citizenship, throwing off local prejudices and gaining at first hand a knowledge of the practice, as well as the theory, of republican government. To further the materialization of his hopes, Washington left a bequest of fifty shares of The Potomac Company "towards the endowment of a University to be established within the limits of the District of Columbia, under the auspices of the General Government, if that government should incline to extend a fostering hand towards it." The Congress never extended "a fostering hand." The Potomac Company passed out of existence and Washington's bequest became worthless.

Fully conscious of Washington's hopes, but motivated primarily by a great missionary urge and the need for a learned clergy, a group of dedicated ministers and laymen sponsored a movement for the establishment of a college in the District of Columbia. Inspired largely by the zeal and energy of the Reverend Luther Rice, they raised funds for the purchase of a site and petitioned Congress for a charter. After much delay and amendment, Congress granted a charter which was approved by President Monroe on February 9, 1821. To safeguard the College's nonsectarian character it provided "That persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College, or denied any of the privileges, immunities, or advantages therefore, for or on account of his sentiments in matters of religion."

During the entire time when the institution was known as Columbian College, its activities were centered on College Hill, a tract of forty-six and a half acres between the present Fourteenth and Fifteenth Streets extending north from Florida Avenue to somewhat beyond Columbia Road. The Medical School was located downtown. For the better part of the Columbian University period, the buildings of the University were situated along H Street between Thirteenth and

Fifteenth Streets. The Medical School group still remains there.

During the last half century the University's present plant has been developed in that section of the old First Ward familiarly known as "Foggy Bottom," between Nineteenth and Twenty-fourth Streets, south of Pennsylvania Avenue. The area is not without its reminders of historic interest to the University. President Monroe who signed the Charter lived at 2017 Eye Street. The first President of the Board of Trustees, the Reverend Obadiah B. Brown, was for fifty years the pastor of a church at Nineteenth and Eye Streets, and Washington selected Twenty-third and E Streets as the site of the National University he had hoped to see established.

#### THE COLLEGES, SCHOOLS, AND DIVISIONS

The George Washington University includes twelve colleges, schools, and divisions, as follows:

Columbian College of Arts and Sciences offers the four-year programs leading to the degrees of Bachelor of Arts and Bachelor of Science. In cooperation with the Department of Pathology and the University Hospital, it offers a course in Medical Technology leading to the degree of Bachelor of Science in Medical Technology. In addition to the four-year programs, Columbian College offers two-year curricula, including preprofessional and terminal, leading to the degrees of Associate in Arts and Associate in Science. At the graduate level, Columbian College offers studies leading to the degrees of Master of Arts, Master of Science, and Master of Fine Arts.

The Graduate Council offers a program of advanced study and research leading to the degree of Doctor of Philosophy.

The School of Medicine offers work leading to the degree of Doctor of Medicine.

The National Law Center includes the Law School and the Graduate School of Public Law. The Law School offers professional courses leading to the degree of Bachelor of Laws. The Graduate School of Public Law offers programs leading to the degrees of Master of Laws, Master of Comparative Law, and Doctor of Juridical Science.

The School of Engineering and Applied Science offers courses leading to the Engineering Technologist Certificate and the degree of Bachelor of Science in the following areas: Civil Engineering, Communications, Control Systems, Electrical Engineering, Electronics, Energy Conversion, Engineering Science, Machine Computers, Measurement Science, Mechanical Engineering, Structures, Theoretical and Applied Mechanics. Graduate programs lead to the degrees of Master of Science, Master of Engineering Administration, and Doctor of Science.

The School of Education offers undergraduate programs leading to the degrees of Bachelor of Arts in Education and Bachelor of Science in Physical Education, and graduate studies leading to the degree of Master of Arts in Education, Master of Arts in Teaching, Education Specialist, and Doctor of Education.

The School of Government, Business, and International Affairs offers work leading to the following degrees: (1) Bachelor of Arts in Government with a major in International Affairs or Public Affairs; (2) Bachelor of Business Administration with a major in Accounting, Business Administration, or Business and Economic Statistics; (3) Certificate of the Institute for Sino-Soviet Studies; (4) Master of Arts in Government with a major field in Public Administration, Public Af-



fairs, International Affairs, Economic Policy, Business and Economic Statistics, or Personnel Administration: (5) Master of Business Administration with a major field in Accounting, Business Administration, Health Care Administration, or Personnel Administration: (6) Master of Public Administration with a major field in Public Administration, Health Care Administration, or Personnel Administration: (7) Graduate Certificate in Health Care Administration (post-Master's Study); (8) Doctor of Business Administration or Doctor of Public Administration.

The College of General Studies supplements the adult education program of the University through Off-Campus Study; Campus Study; Conferences, Seminars, and Special Projects; and Continuing Education and Noncredit Programs. This College offers programs leading to the degrees of Associate in Arts; Associate in Science; Associate in Secretarial Administration; Bachelor of Arts; Bachelor of Business Administration; Bachelor of Science in Geodetic and Cartographic Science; Master of Science in Business Administration; Master of Science in Financial Management; Master of Science in Governmental Administration; Master of Science in International Affairs; Master of Science in Personnel Administration; and Master of Science in Public Administration.

The Division of University Students makes available campus courses for mature students, not candidates for degrees in this University.

The Division of Aerospace Studies offers a program of Air Force ROTC training which is integrated with the curricula of the colleges and schools of the University and leads to appointment as a commissioned officer in the United States Air Force Reserve.

The Summer Sessions.

#### ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

#### LOCATION

The George Washington University is in downtown Washington, four blocks west of the White House and east of the Potomac River with its extensive parkway. Within a few blocks are the buildings housing the offices of many of the departments of the Government.

#### GOVERNMENT

The government and general education management of The George Washington University are vested in a self-perpetuating Board of Trustees, with the President of the University as an ex officio member. The members of the Board are named for a period of three years and are divided into three classes. The members of one class are elected at each annual meeting to fill the places of the members whose terms of office expire. Two members of each class are nominated by the Alumni Association.

## THE GENERAL ALUMNI ASSOCIATION

The objectives of this Association are to unite the graduates who wish to associate themselves for charitable, educational, literary, and scientific purposes, and to promote the general welfare of the University.

Eligible members are those who have matriculated in any school of the University and who have left the University in good standing, or any person who is or has been a member of the teaching, research, or administrative staff of the University, or of the Board of Trustees of the University. Active members are those eligible members who are current contributors to or life members of The George Washington University General Alumni Association, the Alumni Association of any school of the University, or contributors to the Annual Support Program.

The Alumni Office is in Bacon Hall, 2000 H Street NW., Washington, D. C. 20006.

All alumni are urged to keep the Alumni Office informed of changes of address or occupation and to supply information with regard to their fellow alumni.

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\* The Dean and Assistant Deans are ex officio members of all committees.

† The Dean of Faculties, the Dean and Assistant Deans of the College are ex officio members of the Council.

## COLLEGES AND SCHOOLS—DEGREE PROGRAMS

COLUMBIAN COLLEGE OF ARTS AND SCIENCES: Associate in Arts (A.A.), Associate in Science (A.S.), Bachelor of Arts (A.B.), Bachelor of Science (B.S.), Bachelor of Science in Medical Technology (B.S. in Med. Tech.), Master of Arts (A.M.), Master of Fine Arts (M.F.A.), and Master of Science (M.S.)

GRADUATE COUNCIL: Doctor of Philosophy (Ph.D.)

SCHOOL OF MEDICINE: Doctor of Medicine (M.D.)

NATIONAL LAW CENTER:

LAW SCHOOL: Bachelor of Laws (LL.B.)

GRADUATE SCHOOL OF PUBLIC LAW: Master of Laws (LL.M.), Master of Comparative Law (M.Comp.L.), and Doctor of Juridical Science (S.J.D.)

SCHOOL OF ENGINEERING AND APPLIED SCIENCE: Engineering Technologist Certificate (E.T.C.), Bachelor of Science (B.S.), Master of Science (M.S.), Master of Engineering Administration (M.E.A.), and Doctor of Science (D.Sc.)

SCHOOL OF EDUCATION: Bachelor of Arts in Education (A.B. in Ed.), Bachelor of Science in Physical Education (B.S. in P.E.), Master of Arts in Teaching (A.M. in T.), Master of Arts in Education (A.M. in Ed.), Education Specialist (Ed.S.), and Doctor of Education (Ed.D.)

SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS: Bachelor of Arts in Government (A.B. in Govt.), Bachelor of Business Administration (B.B.A.), Certificate of the Institute for Sino-Soviet Studies (Cert. of I.S.S.S.), Master of Arts in Government (A.M. in Govt.), Master of Business Administration (M.B.A.), Master of Public Administration (M.P.A.), Graduate Certificate in Health Care Administration (Grad. Cert. in H.C.A.), Doctor of Business Administration (D.B.A.), and Doctor of Public Administration (D.P.A.)

COLLEGE OF GENERAL STUDIES: Associate in Arts (A.A.), Associate in Secretarial Administration (A.Sec.Adm.), Bachelor of Arts (A.B.), Bachelor of Business Administration (B.B.A.), Bachelor of Science in Geodetic and Cartographic Science (B.S. in Geod. and Cart. Sc.), Master of Science in Business Administration (M.S. in B.A.), Master of Science in Financial Management (M.S. in Fin. Mgt.), Master of Science in Governmental Administration (M.S. in Govt. Adm.), Master of Science in International Affairs (M.S. in I.A.), Master of Science in Personnel Administration (M.S. in Per. Adm.), and Master of Science in Public Administration (M.S. in P.A.)

## ANNUAL ISSUES OF THE UNIVERSITY BULLETIN

*Requests for the following publications should be addressed as indicated.*

COLLEGE OF GENERAL STUDIES, Dean of the College

COURSES OF INSTRUCTION (for The Division of University Students and continuing degree candidates), Director of Admissions

STUDENT FINANCIAL AID, Director, Student Financial Aid

LAW SCHOOL AND GRADUATE SCHOOL OF PUBLIC LAW, Dean of the Law School or Dean of the Graduate School of Public Law

SCHOOL OF ENGINEERING AND APPLIED SCIENCE, Dean of the School

UNDERGRADUATE AND GRADUATE CATALOGUE (Arts and Sciences, Education, Government and Business, International Affairs), Director of Admissions

SCHOOL OF MEDICINE, Admissions Office, School of Medicine

SUMMER SESSIONS, Dean of the Summer Sessions

SCHEDULE OF CLASSES: FALL AND SPRING SEMESTERS, Registrar

SCHEDULE OF CLASSES: SUMMER SESSIONS, Dean of the Summer Sessions

---

Jessie Bigelow Martin, A.B., *Editor of Academic Publications*



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THE UNIVERSITY HOSPITAL, 1898

THE GEORGE WASHINGTON UNIVERSITY BULLETIN

THE NATIONAL LAW CENTER 1965-1966

The Law School and The Graduate School of Public Law



APRIL 1965



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*Volume LXIV, Number 7, April 1965*

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**THE NATIONAL LAW CENTER  
1965-1966**

**The Law School  
The Graduate School of Public Law**

**WASHINGTON, D.C. 20006**

## CORRESPONDENCE DIRECTORY

Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Director of Admissions, The George Washington University, Washington, D. C. 20006.

Information concerning courses of instruction, programs, and faculties of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on page 95.

<i>General Admission</i>	Director of Admissions, Building C
<i>Law School Admission</i>	Dean of The Law School
<i>School of Medicine Admission</i>	1339 H Street NW.
<i>Aerospace Studies (AFROTC)</i>	Director of the Division of Aerospace Studies, Chapin Hall
<i>Alumni Association</i>	Alumni Office, Bacon Hall
<i>Medical Alumni Association</i>	1335 H Street NW.
<i>Foreign Students</i>	Director of Foreign Student Affairs, Building T
<i>Men's housing</i>	Dean of Men
<i>Women's housing</i>	Dean of Women
<i>Fellowships, Scholarships, and Loans</i>	Director, Student Financial Aid
<i>Student Employment</i>	Student Placement Office, 2114 G Street NW.
<i>Summer Sessions</i>	Dean of The Summer Sessions
<i>Transcripts of Records</i>	Registrar, Building C
<i>Veterans Education</i>	Director of Veterans Education
GRADUATE STUDY:	
<i>Master's degrees in Arts and Sciences</i>	Dean of Columbian College of Arts and Sciences
<i>Doctor of Philosophy</i>	Dean of The Graduate Council
<i>In Education</i>	Dean of The School of Education
<i>In Engineering or Applied Science</i>	Dean of The School of Engineering and Applied Science
<i>In Law</i>	Dean of The Graduate School of Public Law
<i>In Accounting, Business Administration, Business and Economic Statistics, Economic Policy, Health Care Administration, International Affairs, Personnel Administration, Public Administration, Public Affairs</i>	Dean of The School of Government, Business, and International Affairs



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## THE CALENDAR FOR 1965-1966

### 1965 SUMMER TERM

- June 7* Registration for all sessions (11:00 a.m. to 7:00 p.m.) *Monday*
- June 8* First- and 13-week sessions begin *Tuesday*
- July 5* Independence Day (holiday) *Monday*
- July 16* First-session classes end *Friday*
- \*July 19-21* First-session examination period *Monday-Wednesday*
- July 22* Registration for students attending 2d session only (11:00 a.m. to 6:00 p.m.) *Thursday*
- July 23* Second session begins *Friday*
- September 1* Last day of classes *Wednesday*
- September 2-4* Second- and 13-week sessions examination period *Thursday-Saturday*

### 1965 FALL SEMESTER

- September 16-18* Registration: *Thursday-Friday* from 12:00 to 8:00 p.m.; *Saturday* from 10:00 a.m. to 1:00 p.m. Application for February graduation due as part of registration
- September 20* Classes begin *Monday*
- October 1* SJD dissertations of February candidates due *Friday*
- November 11* Veterans Day (holiday) *Thursday*
- November 25-27* Thanksgiving recess *Thursday-Saturday*
- December 20-January 1* Christmas recess *Monday-Saturday*
- January 3* Classes resume *Monday*
- January 15* Last day of fall-semester classes *Saturday*
- January 17-26* Examination period *Monday-Wednesday*

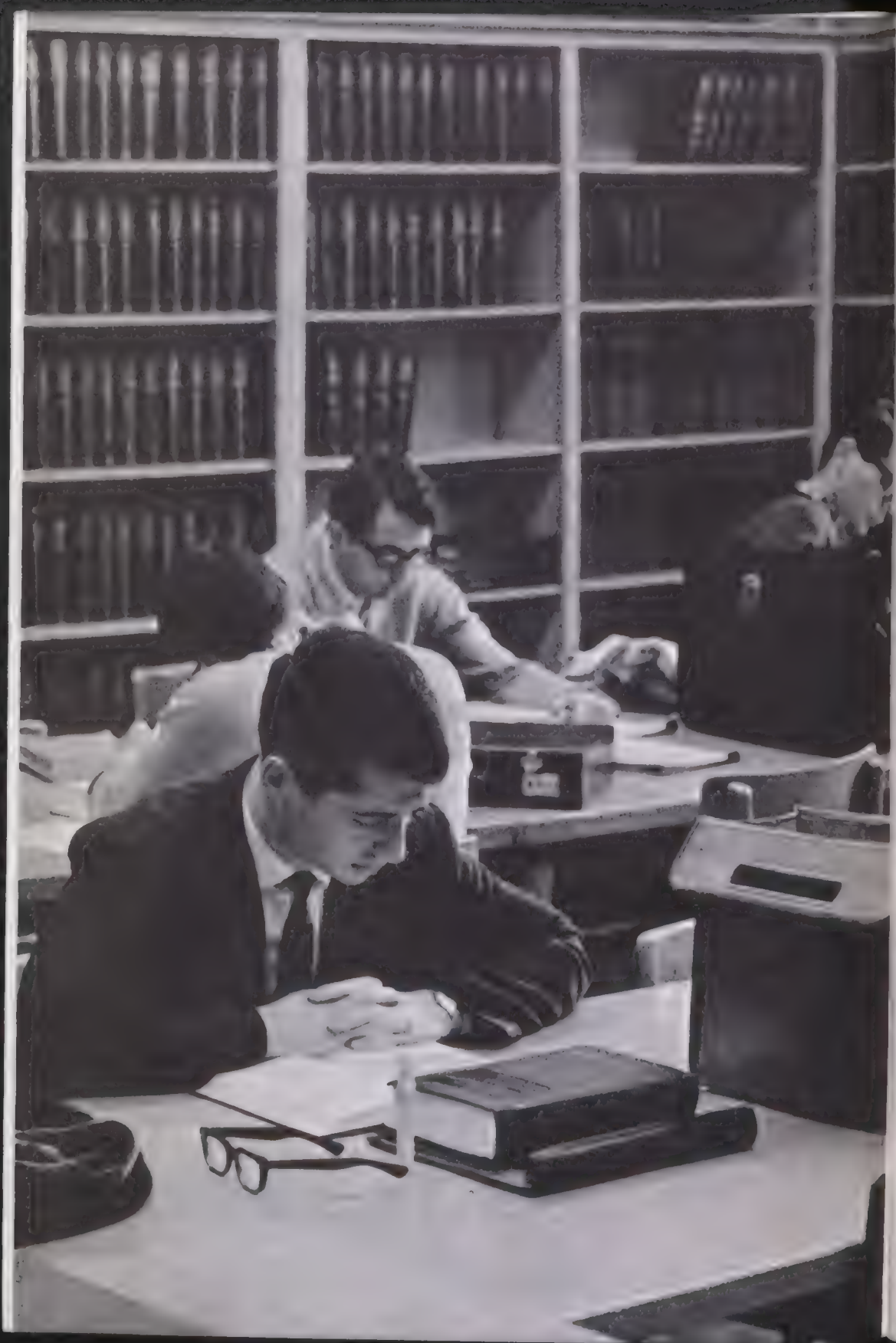
### 1966 SPRING SEMESTER


- January 27-29* Registration: *Thursday-Friday* from 12:00 to 8:00 p.m.; *Saturday* from 10:00 a.m. to 1:00 p.m. Application for June graduation due as part of registration
- January 31* Spring-semester classes begin *Monday*
- February 4* SJD dissertations of June candidates due *Friday*
- February 21* Winter Convocation *Monday*
- February 22* George Washington's Birthday (holiday) *Tuesday*
- March 15* Application for 1966-67 teaching assistantships due *Tuesday*
- April 4-11* Spring recess *Monday-Monday*
- April 12* Classes resume *Tuesday*
- May 2* Application for research assistantships due *Monday*
- May 18* Last day of spring-semester classes *Wednesday*
- May 19-28* Examination period *Thursday-Saturday*
- May 30* Memorial Day (holiday) *Monday*
- June 5* Baccalaureate Service *Sunday*
- June 5* Commencement *Sunday*

Registration for the fall semester 1966-67 *Thursday* through *Saturday* morning, September 15-17, 1966

\* Classes scheduled Wednesday evenings for the 13-week session will meet on Wednesday, July 21.







*The year 1965 marks the one-hundredth anniversary of the founding of The George Washington University Law School. As we celebrate our centennial year a number of special events will focus on legal education in the twentieth-century. These events will not only explore the past and the present, but also provide a source of ideas for future educational growth. Long a pioneer in education in the law, The George Washington University is planning to strengthen this tradition as we enter our second century of service.*

ROBERT KRAMER  
Dean of the Law School

This Bulletin lists the regulations, programs, faculty, and students of the Law School and the Graduate School of Public Law in the National Law Center of The George Washington University. For information concerning the other schools and colleges of the University consult the appropriate catalogue. The issues of the University Bulletin are listed on page 95.



... in the Nation's Capital—



## THE NATIONAL LAW CENTER

### HISTORY

ESTABLISHED IN 1959, THE NATIONAL LAW CENTER seeks, as an integral part of a major University, to establish and coordinate programs of teaching, research, and creative development in law which will assist the profession to meet the demands placed upon it by contemporary society. The Center consists of two separate but closely related schools: the Law School and the Graduate School of Public Law. Emphasizing an interdisciplinary approach to modern social, political, scientific, and economic problems having legal implications, the Center also encourages close relations with other appropriate units of the University.

### Officers of Administration

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Charles Bernard Nutting, A.B., J.D., LL.M., S.J.D., LL.D., Litt.D.,  
L.H.D., *Administrator of the National Law Center*

Robert Kramer, A.B., LL.B., *Dean of the Law School*

Louis Harkey Mayo, B.S., LL.B., J.S.D., *Dean of the Graduate School  
of Public Law*

William Wallace Kirkpatrick, A.B., LL.B., *Assistant Dean of the Law  
School*

Edward Andrew Potts, A.B., LL.B., *Assistant Dean of the Law School*

## The Faculty and Staff of Instruction\*

### EMERITI

- Carville Dickinson Benson, *Professor Emeritus of Law in Residence*  
A.B. 1920, Johns Hopkins University; LL.B. 1923, S.J.D. 1926, Harvard University
- Oswald Symister Colclough, *Professor Emeritus of Law; Dean of Faculties Emeritus*  
B.S. 1920, United States Naval Academy; LL.B. 1935, Sc.D. 1961, The George Washington University; LL.D. 1946, Muhlenberg College; LL.D. 1958, Dickinson College
- Charles Sager Collier, *Professor Emeritus of Law*  
A.B. 1911, LL.B. 1915, S.J.D. 1932, Harvard University
- Robert McKinney Cooper, *Professor Emeritus of Law*  
A.B. 1929, West Virginia University; Ph.M. 1931, University of Wisconsin; J.D. 1934, University of Michigan
- George Bowdoin Craighill, *Professor Emeritus of Law*  
A.B. 1903, University of the South; LL.B. 1906, Georgetown University
- William Thomas Fryer, *Professor Emeritus of Law in Residence*  
A.B. 1922, LL.B. 1924, The George Washington University; J.D. 1925, Yale University
- James Oliver Murdock, *Professor Emeritus of Law*  
Ph.B. 1916, University of Chicago; LL.B. 1924, Harvard University
- Alvin LeRoy Newmyer, *Professor Emeritus of Law*  
LL.B. 1906, The George Washington University

### ACTIVE

- Jeffrey Marshall Albert, *Associate Professor of Law*  
A.B. 1956, Princeton University; LL.B. 1959, Harvard University; LL.M. 1962, New York University
- Richard Chester Allen, *Professor of Law in the Faculty of the Graduate School of Public Law; Director of Mental Competency Study*  
A.B. 1948, LL.B. 1950, Washington University; LL.M. 1963, University of Michigan
- Eugene Norman Barkin, *Assistant Professorial Lecturer in Law in the Graduate School of Public Law*  
A.B. 1940, University of Scranton; LL.B. 1943, Dickinson School of Law
- Joel Barlow, *Professorial Lecturer in Law*  
A.B. 1929, Alma College; LL.B. 1935, The George Washington University; LL.D. 1935, Norwich University
- Jerome Aure Barron, *Associate Professor of Law*  
A.B. 1955, Tufts University; LL.B. 1958, Yale University; LL.M. 1960, The George Washington University
- Edward Abbot Beard, *Professorial Lecturer in Law*  
LL.B. 1939, Georgetown University; Judge, District of Columbia Court of General Sessions
- Hugh Yancey Bernard, Jr., *Librarian of the Law Library*  
A.B. 1941, University of Georgia; B.S. in L.S. 1947, Columbia University; J.D. 1961, The George Washington University
- Fleming Brown Bomar, *Professorial Lecturer in Law*  
A.B. 1936, Wofford College; LL.B. 1939, Duke University
- James Milton Brown, *Associate Professor of Law*  
A.B. 1943, University of Illinois; LL.B. 1963, University of Florida
- Thomas Hayward Brown, *Associate Professorial Lecturer in Law*  
Member of the bar of the District of Columbia
- George Davis Cary, *Professorial Lecturer in Law*  
B.S. 1932, University of Pennsylvania; LL.B. 1938, The George Washington University; LL.M. 1942, Georgetown University
- John Cibinic, Jr., *Associate Professor of Law in the Faculty of the Graduate School of Public Law; Assistant Director of the Government Contracts Program*  
A.B. 1956, University of Pittsburgh; J.D. 1960, The George Washington University

\* Professors, Adjunct Professors, Associate Professors, Assistant Professors, and the Librarian of the Law Library constitute the Faculty of the Law School. The President of the University, the Dean of Faculties, the Registrar of the University, and the Director of Admissions of the University are ex officio members of the Faculty.

- Thomas Akroyd Clingan, Jr., *Associate Professor of Law; Faculty Editor-in-Chief of the Law Review*  
B.S. 1950, United States Coast Guard Academy; J.D. 1963, The George Washington University
- Manuel Frederick Cohen, *Professorial Lecturer in Law in the Graduate School of Public Law*  
B.S. 1933, Brooklyn College; LL.B. 1936, Brooklyn Law School
- Sheldon Stanley Cohen, *Professorial Lecturer in Law*  
A.B. 1950, J.D. 1952, The George Washington University
- Hugh Baker Cox, *Professorial Lecturer in Law*  
A.B. 1926, University of Nebraska; A.B. 1929, B.C.L. 1930, Oxford University
- James Forrester Davison, *Professor of Law*  
A.B. 1921, LL.B. 1923, Dalhousie University; LL.M. 1924, S.J.D. 1929, Harvard University
- Robert Galloway Dixon, Jr., *Professor of Law*  
A.B. 1943, Ph.D. 1947, Syracuse University; LL.B. 1956, The George Washington University
- Weaver White Dunnan, *Professorial Lecturer in Law*  
A.B. 1947, LL.B. 1949, Harvard University
- Justin Lincoln Edgerton, *Professorial Lecturer in Law*  
A.B. 1929, LL.B. 1931, The George Washington University
- John Alfred Eichler, *Assistant Professorial Lecturer in Law*  
B.S. 1957, University of Maryland; J.D. 1962, The George Washington University; LL.M. 1964, Harvard University
- Pasquale Joseph Federico, *Associate Professorial Lecturer in Law*  
B.S. 1923, Case Institute of Technology; A.M. 1925, The George Washington University; LL.B. 1932, American University
- Elyce Zenoff Ferster, *Associate Research Professor of Law in the Graduate School of Public Law*  
B.S. 1951, University of Wisconsin; LL.B. 1954, Northwestern University
- Monroe Henry Freedman, *Associate Professor of Law*  
A.B. 1952, LL.B. 1954, LL.M. 1956, Harvard University
- Philip Milton Glick, *Professorial Lecturer in Law in the Graduate School of Public Law*  
Ph.B. 1928, J.D. 1930, University of Chicago
- Samuel Vahram Goekjian, *Associate Professorial Lecturer in Law in the Graduate School of Public Law*  
A.B. 1952, Syracuse University; LL.B. 1957, Harvard University
- George Joseph Goldsborough, *Professorial Lecturer in Law*  
B.S. 1947, United States Military Academy; J.D. 1950, The George Washington University
- William Wolcott Goodrich, *Assistant Professorial Lecturer in Law in the Graduate School of Public Law*  
LL.B. 1938, University of Texas
- David Crittenden Green, *Associate Professor of Law*  
A.B. 1948, Harvard University; LL.B. 1951, University of Virginia
- Harold Paul Green, *Professor of Law in the Faculty of the Graduate School of Public Law*  
A.B. 1942, J.D. 1948, University of Chicago
- Jackson Reid Hambrick, *Professor of Law*  
A.B. 1938, Wofford College; LL.B. 1942, Duke University
- Louis James Harris, *Professor of Law in the Faculty of the Graduate School of Public Law*  
A.B. 1932, Cornell University; LL.B. 1939, S.J.D. 1942, Brooklyn Law School; LL.M. 1948, The George Washington University
- George Luzerne Hart, Jr., *Professorial Lecturer in Law*  
A.B. 1927, Virginia Military Institute; LL.B. 1930, Harvard University; Judge, United States District Court for the District of Columbia
- Murdock Head, *Professorial Lecturer in Forensic Medicine*  
D.D.S. 1947, University of Louisville; M.D. 1953, University of Vermont; LL.B. 1958, The George Washington University
- Philip Field Herrick, *Professorial Lecturer in Law*  
A.B. 1929, Williams College; LL.B. 1933, LL.M. 1936, The George Washington University



- James Daniel Hill, *Assistant Professorial Lecturer in Law in the Graduate School of Public Law*  
A.B. 1936, J.D. 1938, State University of Iowa
- John Wingfield Jackson, *Adjunct Professor of Law*  
B.S. 1928, University of Pennsylvania; LL.B. 1932, The George Washington University
- Alan Hirsh Kaplan, *Assistant Professorial Lecturer in Law in the Graduate School of Public Law*  
A.B. 1951, LL.M. 1957, New York University; LL.B. 1954, Harvard University
- Irving Kayton, *Associate Professor of Law*  
A.B. 1951, Cornell University; LL.B. 1957, New York University; LL.M. 1957, Columbia University
- John Alexander Kendrick, *Clerk of the Trial Practice Court*  
A.B. 1942, LL.B. 1943, The George Washington University
- William Wallace Kirkpatrick, *Professor of Law; Assistant Dean of the Law School*  
A.B. 1934, LL.B. 1938, Harvard University
- Vincent Kleinfeld, *Assistant Professorial Lecturer in Law in the Graduate School of Public Law*  
LL.B. 1929, Columbia University
- Robert Kramer, *Professor of Law; Dean of the Law School*  
A.B. 1935, LL.B. 1938, Harvard University
- Stuart Charles Law, *Associate Professor of Law*  
A.B. 1950, LL.B. 1953, Yale University
- \*Gust Angelo Ledakis, *Professor of Law*  
B.B.A. 1953, LL.B. 1955, University of Washington; S.J.D. 1958, University of Michigan
- Luke Tsung-chou Lee, *Assistant Professorial Lecturer in Law in the Graduate School of Public Law*  
A.B. 1944, St. John's University, Shanghai; A.M. 1947, Columbia University; Ph.D. 1954, Fletcher School of Law and Diplomacy; LL.B. 1963, University of Michigan
- Herbert Joseph Liebesny, *Associate Professorial Lecturer in Law in the Graduate School of Public Law*  
J.D. 1935, University of Vienna
- William Thomas Mallison, Jr., *Professor of Law*  
A.B. 1940, University of Washington; LL.B. 1948, Vanderbilt University
- Henry Girard Manne, *Professor of Law*  
A.B. 1950, Vanderbilt University; J.D. 1952, University of Chicago; LL.M. 1953, Yale University
- Louis Harkey Mayo, *Professor of Law; Dean of the Graduate School of Public Law*  
B.S. 1940, United States Naval Academy; LL.B. 1949, University of Virginia; J.S.D. 1953, Yale University
- John Albert McIntire, *Professorial Lecturer in Law*  
A.B. 1929, LL.D. 1954, Wittenberg College; LL.B. 1931, University of Cincinnati
- Leroy Sorenson Merrifield, *Professor of Law*  
A.B. 1938, LL.B. 1941, University of Minnesota; M.P.A. 1942, S.J.D. 1956, Harvard University
- Arthur Selwyn Miller, *Professor of Law*  
A.B. 1938, Willamette University; LL.B. 1949, Stanford University; J.S.D. 1959, Yale University
- Milton Mitchell, *Assistant Professorial Lecturer in Law in the Graduate School of Public Law*  
LL.B. 1942, The George Washington University
- George Edward Monk, *Professorial Lecturer in Law*  
A.B. 1928, LL.B. 1930, LL.M. 1934, The George Washington University
- Ralph Clarke Nash, Jr., *Professor of Law; Director of the Government Contracts Programs*  
A.B. 1953, Princeton University; J.D. 1957, The George Washington University
- Lester Nurick, *Professorial Lecturer in Law in the Graduate School of Public Law*  
B.S.S. 1934, City University of New York; LL.B. 1937, Brooklyn Law School
- Charles Bernard Nutting, *Professor of Law; Administrator of the National Law Center*  
A.B. 1927, J.D. 1930, State University of Iowa; LL.M. 1932, S.J.D. 1933, Harvard University; LL.D. 1957, University of Pittsburgh; Litt.D. 1957, Geneva College; L.H.D. 1957, Seton Hill College; LL.D. 1960, Dickinson College of Law

\* On leave of absence 1965-66.

- Robert Eugene Park, *Associate Professor of Law*  
B.S. 1952, University of Florida; A.B. 1957, LL.B. 1961, Yale University
- Max Pock, *Associate Professor of Law*  
J.D. 1958, University of Iowa; S.J.D. 1962, University of Michigan
- Edward Andrew Potts, *Associate Professor of Law; Assistant Dean of the Law School*  
A.B. 1949, University of Michigan; LL.B. 1952, The George Washington University
- Bernard Ramundo, *Associate Professorial Lecturer in Law in the Graduate School of Public Law*  
A.B. 1947, City University of New York; LL.B. 1949, A.M. 1957, Columbia University
- David Robinson, Jr., *Associate Professor of Law*  
A.B. 1950, Reed College; LL.B. 1956, Columbia University
- Eugene Harvey Rotberg, *Assistant Professorial Lecturer in Law in the Graduate School of Public Law*  
B.S. 1951, Temple University; LL.B. 1954, University of Pennsylvania
- Joseph Michael Francis Ryan, Jr., *Professorial Lecturer in Law*  
A.B. 1943, St. Joseph's College; LL.B. 1950, LL.M. 1952, Georgetown University;  
Judge, District of Columbia Court of General Sessions
- Lewis Aaron Schiller, *Associate Professor of Law*  
A.B. 1950, LL.B. 1952, University of Texas; A.M. 1958, Fletcher School of Law and Diplomacy
- David Earl Seidelson, *Associate Professor of Law*  
A.B. 1951, LL.B. 1956, University of Pittsburgh
- David James Sharpe, *Associate Professor of Law*  
A.B. 1950, University of North Carolina; LL.B. 1955, Harvard University
- George Walter Shelhorse, *Associate Professorial Lecturer in Law in the Graduate School of Public Law*  
LL.B. 1951, The George Washington University
- Dudley Graham Skinker, *Associate Clerk of the Trial Practice Court*  
LL.B. 1940, The George Washington University
- William Mark Speiller, *Assistant Professorial Lecturer in Law*  
B.S. 1950, LL.B. 1952, Syracuse University; LL.M. 1953, Harvard University
- James Edward Starrs, *Associate Professor of Law*  
LL.B., A.B. 1958, St. John's University; LL.M. 1959, New York University
- Louis Samuel Wallerstein, *Associate Professorial Lecturer in Law in the Graduate School of Public Law*  
B.S. in S.S. 1947, City University of New York; LL.B. 1958, University of Baltimore
- David Benson Weaver, *Professor of Law*  
A.B. 1943, Ohio Wesleyan University; LL.B. 1948, Western Reserve University
- Glen Earl Weston, *Professor of Law*  
B.S. 1943, University of Maryland; LL.B. 1948, The George Washington University
- Charles James Zinn, *Professorial Lecturer in Law*  
A.B. 1927, LL.B. 1930, Fordham University; LL.M. 1951, S.J.D. 1954, Georgetown University

#### ASSISTANTS \*

- Lawrence Herman Averill, Jr., *Teaching Fellow in the Graduate School of Public Law*  
A.B. 1962, Indiana University; LL.B. 1964, American University
- Gerald Fred Edelstein, *Teaching Fellow in the Graduate School of Public Law*  
A.B. 1961, University of Vermont; LL.B. 1964, Cornell University
- John Hayes Reese, *Graduate Fellow in the Graduate School of Public Law*  
B.B.A., LL.B. 1954, Southern Methodist University
- Bernard Keith Vetter, *Teaching Fellow in the Graduate School of Public Law*  
A.B. 1962, LL.B. 1964, Louisiana State University

\* For the academic year 1964-65.





## THE LAW SCHOOL

### HISTORY

THE LAW SCHOOL, the oldest in the District of Columbia, was established in 1865 with a formal program of two years of study. This was largely through the efforts of the Reverend George Whitefield Samson, President of Columbian College, whose action resulted in the purchase of a separate building for holding law classes. This building had belonged to Trinity Church of which Francis Scott Key had been Senior Warden. It was occupied by the Law School until 1884.

Sixty graduates, from twenty-two of the then thirty-seven states, received degrees in 1867. The School continued to have a student body and a faculty which reflected the fact that it was at the seat of our nation's government. Associate Justices David J. Brewer and John Marshall Harlan of the Supreme Court of the United States were among the prominent members of the bench and bar who served as lecturers.

In 1877, one year after the first such program was adopted in the United States, the Law School instituted a course leading to the degree of Master of Laws. In 1898 the course of instruction for the degree of Bachelor of Laws was extended to three years. The School took part in 1900 in the organization of the Association of American Law Schools. Later, women students were admitted and in 1916 the first woman to take a regular course in law was graduated.

The Law School moved into its present quarters in 1925, marking the occasion with a dedicatory address by Roscoe Pound. The building, Stockton Hall, is named for Rear Admiral Charles H. Stockton, President of the University from 1910 to 1917.

In the past quarter-century the Law School has developed its course and seminar offerings with consideration for the needs of first-degree and graduate students. The degree of Doctor of Juridical Science was instituted in 1940. The needs of foreign lawyers who come to this country and who require additional preparation for law work in the United States resulted in the creation of programs for the degrees of Master of Comparative Law in 1946 and Master of Comparative Law (American Practice) in 1951.

National University, which had had an important place in legal education in the District of Columbia since 1869, was merged in The George Washington University in August 1954.

Programs of special research and study, such as the independent Patent, Trademark, and Copyright Research Institute, give richness to the basic curriculum of the Law School.

After years of planning, the National Law Center of The George Washington University, including the Law School and the Graduate School of Public Law, was established in 1959.

## LOCATION IN THE NATION'S CAPITAL

Of special significance is the location of the Law School in the Nation's Capital, the focal point of the law in action, both American and international. The work of the School goes on in this environment, presenting a unique opportunity for observation and study of federal agencies—judicial, legislative, and administrative. Readily accessible are the Supreme Court of the United States, the federal trial and appellate courts of the District of Columbia, and, in addition, federal courts of special jurisdiction, such as the United States Court of Claims, the United States Court of Customs and Patent Appeals, the Tax Court of the United States, and the Court of Military Appeals. Current federal legislation can be studied as it is considered by Congressional committees as it comes up for debate on the floors of the House of Representatives and the Senate. With respect to the federal administrative agencies, students here in Washington have matchless opportunities for study and observation. They can attend informal and formal hearings of these agencies and can obtain from the docket sections complete records of administrative adjudication in specific cases. Illustrative of such federal agencies are the Interstate Commerce Commission and the Civil Aeronautics Board in the field of transportation; the Federal Trade Commission in the field of trade regulation; the Securities and Exchange Commission in the field of security issues and corporate finance; the National Labor Relations Board in the field of labor-management relations; the United States Patent Office in the field of patent law; the Federal Power Commission in the field of water, natural gas, and electric power; and the Federal Communications Commission in the field of radio and television.

Supplementing these environmental advantages of law in action are the exceptional research library collections in the Library of Congress, in the various departments of the Federal Government, and in the libraries of the headquarters of national and international organizations located in Washington. The notable library of the Carnegie Foundation for International Peace has been acquired by The George Washington University for use of research students in international and comparative law, fields with respect to which Washington has come to be called "The Capital of the World."

The years of residence at law school are years of participation in the life of the community, which in the case of The George Washington University Law School, is the government of the United States. As a consequence, the study of law takes on added meaning, whether the goal be government service or practice, general or specialized, and whatever the community in which the student plans to practice.

## OBJECTIVES

The primary purpose of the Law School is to prepare men and women to meet the needs of society in the many fields of law, public and private. These needs call not only for technical skill but also for responsible leadership in the development of the law and the administration of justice. In fulfilling these responsibilities the Law School conducts (1) a program of study in preparation for the practice of law, whether it be general practice, specialized practice, or government service; (2) the publication of a law journal containing the results of research in public law; and (3) a series of student professional co-curricular activities. The Graduate School of Public Law supplements



this program with study and research on the graduate level for foreign as well as for American students and with a continuing legal education program for members of the bar.

## **The Bachelor of Laws Program**

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The wide geographical distribution of the students who come to the Nation's Capital to study law (see Summaries of Registration, page 90) makes for a truly national law school. Students from almost every state in the Union here join students from several foreign countries in their legal training. Last year over 320 colleges and universities were represented. The basic curriculum leading to the Bachelor of Laws degree is addressed to the development and application of legal principles, skills, and ideals which are indispensable to the equipment of a lawyer for professional responsibility and leadership in modern society. It includes, first and foremost, the traditional core of legal education, namely, the study of legal materials—judicial, statutory, and administrative—and instruction in the understanding and technique of their use. It also includes the study of the nature and purpose of law, the history of the Anglo-American legal system, and the history and standards of the legal profession; practice in the skills of legal research and legal writing; elementary training in trial and appellate practice; and, through the medium of seminars, experience in group handling of legal problems.

### **ENTERING CLASSES**

The curriculum is organized so that beginning students may enter the Law School only at the start of the fall semester. Transfer students may enter at the start of the spring semester also.

### **ENTRANCE REQUIREMENTS**

*For the Degree of Bachelor of Laws.*—A Bachelor of Arts or equivalent degree from an accredited college or university; a satisfactory quality of work; and an acceptable distribution of courses are required. Eligibility is based on personal and scholastic records and on the result of the Law School Admission Test. No applicant will be accepted who is ineligible to return in good standing to a previously attended law school. From the applicants, a selection is made by the Committee on Admissions.

Information concerning the Law School Admission Test may be obtained from the Dean of the Law School or from the Educational Testing Service, 20 Nassau Street, Princeton, N. J., 08540; or 1947 Center Street, Berkeley, Calif. 94704. The test is administered at various centers of the United States in February, April, July, and November each year. Completed application blanks and fees must be received by the Educational Testing Service at least two weeks before the date of the test. It is not necessary that formal application for admission to the Law School be made prior to taking the test.



## ADVANCED STANDING

Advanced standing toward the degree of Bachelor of Laws may be granted for work successfully completed in other law schools which are members of the Association of American Law Schools or are approved by the American Bar Association. Transferred credits will not be recognized in excess of those which might be earned in a similar period in this Law School.

Advanced standing will not be granted for law work already counted toward the Bachelor of Arts or other pre-legal degree.

## UNCLASSIFIED STUDENTS

A degree candidate with an above-average record at another law school which is a member of the Association of American Law Schools or is approved by the American Bar Association may, at the discretion of the Dean, be admitted as an unclassified student to earn credits for transfer to the other law school.

## REQUIREMENTS FOR THE DEGREE\*

To be recommended for the degree of Bachelor of Laws (LL.B.) the student must have completed a residence period of not less than three academic years (four years for evening students) and 80 semester hours of required and elective courses, with a cumulative average of at least 65. At least one academic year of residence and 28 semester hours are required of students admitted with advanced standing. The work of the final semester or summer session must be completed while in residence at this Law School. Credits allowed by way of advanced standing are not included in computing the average required for graduation.

*Graduation Requirements.*—See page 40 for a statement of the graduation requirements.

## HONORS

The degree of Bachelor of Laws "with distinction" is awarded students who obtain a minimum cumulative average of 85.

## RESIDENCE

Candidates for the degree of Bachelor of Laws must complete a residence period of three academic years. Attendance in the day division for the fall and spring semesters constitutes residence for an academic

\* The degree of Juris Doctor (J.D.), available only to students who entered the Law School prior to September 1961, is conferred as a recognition of the completion at The George Washington University Law School, with high rank, of the required program of study for the Bachelor's degree, including experience in research and legal authorship. To be recommended for this degree the student must have completed: (1) a residence period of not less than three academic years (four years for evening students); (2) 80 semester hours with a cumulative average of at least B including one of the following courses: Comparative Law, Jurisprudence, or one of the graduate seminars; and (3) one year of acceptable service on the board of student editors of *The George Washington Law Review*, election to which is subject to regulations laid down by the Faculty. All requirements for the degree must be completed at this Law School.

This degree is no longer generally available.

year; similar attendance in the evening division constitutes residence for three-fourths of an academic year. Consequently, a day student must attend 6 semesters to meet residence requirements, an evening student must attend 8. Students authorized to take schedules of less than 10 hours in the day division or less than 6 hours in the evening division receive residence credit on a proportional basis. Students who attend the summer sessions receive fractional residence credit.

### CURRICULUM

*Required and Elective Courses.*—A program of required and elective courses has been developed to assure coverage of the basic courses and allow a degree of flexibility to meet the diverse interests of students. All first-year courses and four advanced courses are required, leaving a total of 39 hours of electives. Specially qualified students may secure approval to take graduate courses and research in public law. It is important that students plan ahead regarding their electives.

*Trial Practice Court.*—Classroom instruction is conducted in pleading and procedure, trial and appellate practice, and evidence. This instruction includes grounding in the principles of the Federal Rules of Civil Procedure and the Federal Rules of Criminal Procedure. In addition, each senior student is required to participate in the work of the Trial Practice Court, which includes the trying of cases as junior counsel and as senior counsel. A special section of the court is devoted exclusively to the trial of patent cases. Experience in preparing and arguing appellate court cases is available through the course in Appellate Practice and Procedure and through the Case Club Competition.

*Patent Law.*—The following courses are particularly suggested for students interested in patent law: Unfair Trade Practices, Patent Law, Patent Office Practice, Patent Trial Practice Court, Patent Licensing and International and Comparative Patent Law, and Federal Antitrust Laws. Additional courses recommended are Advanced Topics in Patent Law and Trade Regulation Seminar.

### Day Division

#### FIRST YEAR

FALL SEMESTER		SPRING SEMESTER	
Contracts I .....	2	Constitutional Law .....	4
Criminal Law and Procedure..	4	Contracts II .....	4
Legal Method and Legal System.	3	Real Property .....	4
Personal Property .....	2	Torts II .....	2
Torts I .....	3		
Total semester hours.....		14	Total semester hours..... 14

#### SECOND YEAR

FALL SEMESTER		SPRING SEMESTER	
Civil Procedure .....	4	Administrative Law .....	3
Elective .....	10	Evidence .....	4
		Elective .....	7
Total semester hours.....		14	Total semester hours..... 14

### THIRD YEAR

FALL SEMESTER		SPRING SEMESTER	
Trial Practice Court.....	2	Elective .....	12
Elective .....	10		
Total semester hours.....		Total semester hours.....	
12		12	

### Evening Division

#### FIRST YEAR

FALL SEMESTER		SPRING SEMESTER	
Contracts I .....	2	Contracts II .....	4
Legal Method and Legal System..	3	Criminal Law and Procedure..	4
Personal Property .....	2	Torts II .....	2
Torts I .....	3		
Total semester hours.....		Total semester hours.....	
10		10	

#### SECOND YEAR

FALL SEMESTER		SPRING SEMESTER	
Civil Procedure .....	4	Constitutional Law .....	4
Real Property .....	4	Elective .....	6
Elective .....	2		
Total semester hours.....		Total semester hours.....	
10		10	

#### THIRD YEAR

FALL SEMESTER		SPRING SEMESTER	
Elective .....	10	Administrative Law .....	3
		Evidence .....	4
		Elective .....	3
Total semester hours.....		Total semester hours.....	
10		10	

#### FOURTH YEAR

FALL SEMESTER		SPRING SEMESTER	
Trial Practice Court.....	2	Elective .....	10
Elective .....	8		
Total semester hours.....		Total semester hours.....	
10		10	

### THE LAW REVIEW

*The George Washington Law Review*, published by the University, is edited and managed by students of the Law School under the supervision of a faculty adviser. It is devoted exclusively to state and federal public law. The location of the University in the National Capital, where the primary sources of federal public law may be observed in operation, affords an unexcelled opportunity for specialization in this field.

The student staff participates in a two-year *Law Review* program. The editorial staff is selected from among those students who have successfully completed the first year of *Review* work. Students receive four hours of academic credit for the two-year program.



### **THE STUDENT BAR ASSOCIATION**

Every student in the Law School is a member of the Student Bar Association, which is organized to enable students to become better acquainted with problems of the profession, to foster professional ideals, and to bring about closer contact with members of the profession engaged in active practice of the law. The work of the Student Bar Association is carried on by various committees and by group and general meetings of a professional and social nature. From time to time lectures are given by outstanding authorities on legal and professional problems.

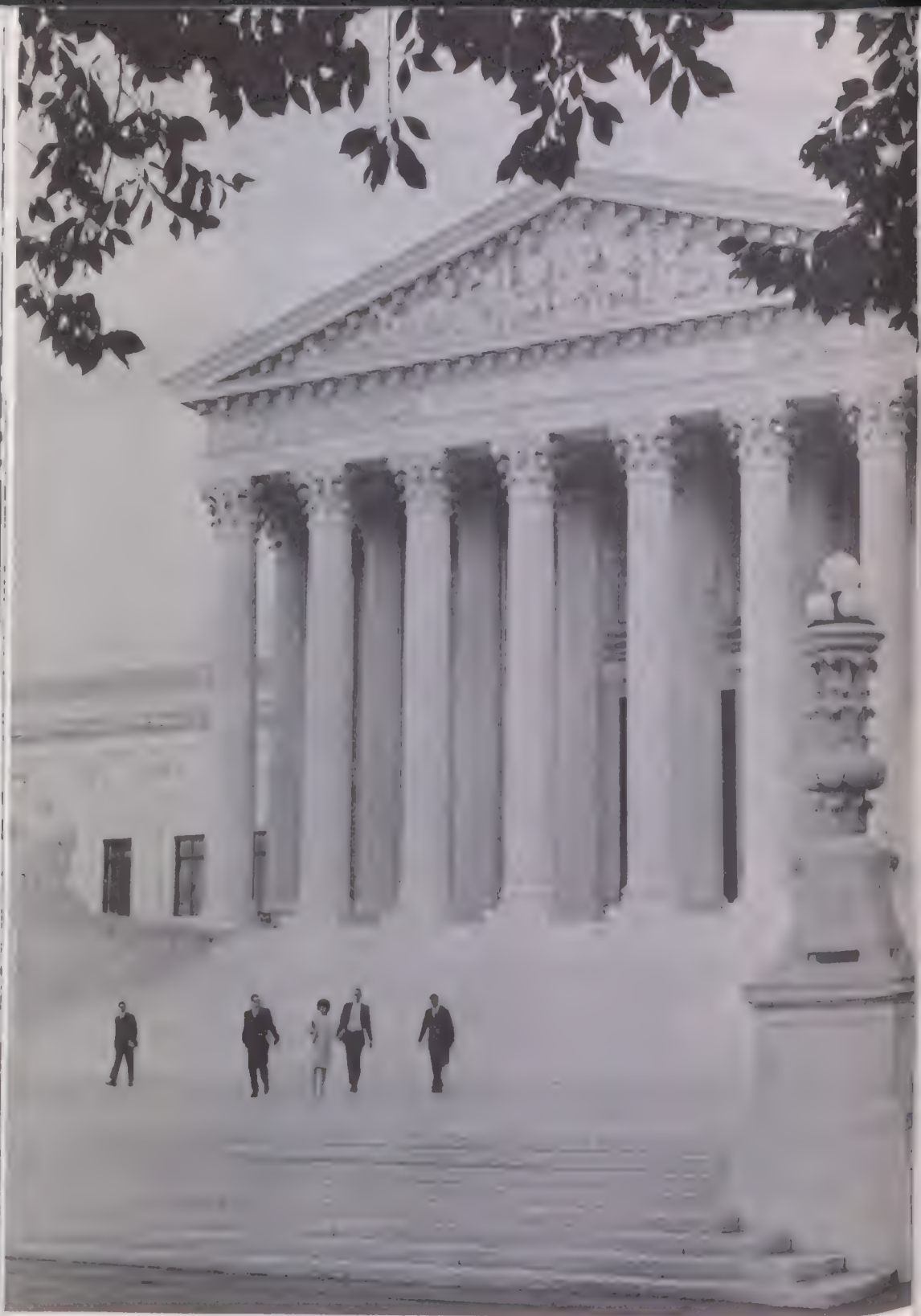
An important activity is the Van Vleck Case Club Competition, which provides an opportunity for training in appellate advocacy. First- and second-year students participate as contestants before courts composed of members of the Faculty and the local bar. Senior law students of the Case Club also sit as judges. The final argument is held before a court composed of distinguished federal judges.

The Legal Aid Program is under the joint sponsorship of The George Washington University Student Bar Association and the Junior Bar Section of the District of Columbia Bar Association. Participating students assist court-appointed attorneys in the preparation of cases for trial or appeal. Qualified second- and third-year students are eligible for participation in the program.

In the ranking of member associations by the American Law Student Association, The George Washington University Student Bar Association has received first place twice and second place twice in past years.

### **ORDER OF THE COIF**

The Order of the Coif, a national honor society with chapters in over forty law schools, aims "to foster a spirit of careful study and to mark in a fitting manner those who have attained a high grade of scholarship." The George Washington University Chapter was established in 1926. Members are elected each year from the highest-ranking 10 per cent of the graduating class of the Law School.



The Supreme Court of the United States

# GRADUATE SCHOOL OF PUBLIC LAW

Dean L. H. Mayo

## Faculty and Staff of Instruction\*

*Professors* R.C. Allen, J.F. Davison, R.G. Dixon, Jr., H.P. Green, L.J. Harris, Robert Kramer, L.H. Mayo, L.S. Merrifield, A.S. Miller, R.C. Nash, Jr., C.B. Nutting, G.E. Weston

*Professorial Lecturers* Joel Barlow, Fleming Bomar, M.F. Cohen, S.S. Cohen, H.B. Cox, W.W. Dunnan, P.M. Glick, Murdock Head, J.A. McIntire, Lester Nurick

*Associate Professors* John Cibinic, Jr., Elyce Ferster (*Research*), E.A. Potts

*Associate Professorial Lecturers* S.V. Goekjian, H.J. Liebesny, Bernard Ramundo, G.W. Shelhorse, L.S. Wallerstein

*Assistant Professorial Lecturers* E.N. Barkin, W.W. Goodrich, J.D. Hill, A.H. Kaplan, V.A. Kleinfeld, L.T. Lee, Milton Mitchell, E.H. Rothberg

## HISTORY

The general concept of a graduate school of public law in the City of Washington goes back at least as far as World War II, when a group of law teachers then in government service discussed the matter on several occasions. The idea was revived some years later when the Trustees of The George Washington University adopted a resolution commending "the Law Center as being worthy of the strong support of the entire University . . . and of all those who believe that the Law Center offers an opportunity for service of the highest order." During succeeding years the concept was further refined and it was determined that the Center should include a Graduate School of Public Law with its own Dean and Faculty. In 1959 the Trustees established the School.

## OBJECTIVES

The Graduate School of Public Law has two basic objectives: (1) *to improve the quality of the educational process* by which lawyers are trained to cope with the increasingly complex problems of public law, including government-industry relationships and international affairs; and (2) *to serve as an independent analysis center* for the purpose of examining and evaluating selected legal-policy issues of significant contemporary and long range interest. The first objective is imple-

\* Professors, Associate Professors, and Assistant Professors constitute the Faculty. The President of the University, the Dean of Faculties, the Registrar of the University, and the Director of Admissions of the University are ex officio members of the Faculty.



mented primarily through the graduate curriculum of courses and seminars while the second is achieved through continuing research study projects. Both of these objectives are covered in the semi-autonomous programs, such as that in Government Contracts.

## **Programs of Study**

### **DEGREES OF MASTER OF LAWS AND DOCTOR OF JURIDICAL SCIENCE**

The administration of justice under law is a matter so vast and complex that some graduates feel the need for further study to broaden and deepen their understanding of the law. Others wish to extend their study into rapidly developing specialized fields. Graduate instruction, leading to the degree of Master of Laws, enables qualified students to attain one or both of these objectives.

The student may register as a candidate for the regular Master of Laws degree in which case he has essentially full discretion in the choice of courses and seminars or he may register for a Master of Laws program in one of the selected fields of specialization: (1) Government Procurement Law, (2) Administrative Law, (3) Patent and Trade Regulation Law, (4) Foreign Trade and Investment Law, or (5) Taxation in which event certain courses are required or recommended. Graduates of these selected Master of Laws programs have an appropriate notation made on their diplomas indicating the field of specialization. Additional information concerning these selected Master of Laws programs may be obtained from the Dean.

The degree of Doctor of Juridical Science is offered for selected students whose aim is to extend still further their studies by pursuing original research in law.

Graduate work is available to evening as well as day students for the convenience of lawyers in private practice and in government service.

### **CONTINUING LEGAL EDUCATION**

An important part of the graduate program is the offering of courses in various fields of the law for members of the bar not interested in degree candidacy but desirous of keeping abreast of current developments. The offerings in the field of governmental regulation provide opportunities for specialization. Although graduate courses are particularly suitable, other elective courses may be taken in appropriate cases. Members of the bar taking graduate work in this way register as Unclassified students or as Continuing Legal Education students.

### **PROGRAM FOR FOREIGN LAWYERS**

To meet the needs of lawyers from countries whose legal systems are not based on the English law, two additional programs of study have been made available. For those who wish to acquire an understanding of our system which will permit them to work with its materials and practitioners after returning to their own countries, the program for the degree of Master of Comparative Law permits a selection of regular courses taken with undergraduate and graduate students.

Foreign lawyers who wish to practice in a common law jurisdiction may enroll in the program for the degree of Master of Comparative Law (American Practice), a more intensive program of courses appropriate to this goal.

## RESEARCH IN PUBLIC LAW

Research in public law is conducted under the supervision of members of the Faculty of the Graduate School of Public Law. The purpose of this research is to furnish means for training specialists in public law, either as government lawyers or as lawyers representing individuals or corporations in cases in which the Government is a party; and to assist in the analysis, clarification, formulation, and improvement of public law, substantive and procedural.

Candidates for graduate degrees and specially qualified seniors may pursue this work.

## UNCLASSIFIED STUDENTS

A member of the bar or a person, not a member of the bar, who is a graduate of a member school of the Association of American Law Schools or a law school approved by the American Bar Association may, at the discretion of the Dean, be admitted as an unclassified student.

Unclassified students participate in the work of the course and take examinations. Courses taken by unclassified students will not be credited toward degrees at this School.

## CONTINUING LEGAL EDUCATION STUDENTS

A simplified admission and registration procedure is used for members of the bar who desire to take courses on a noncredit basis. Continuing Legal Education students may not participate in student activities or benefit from the medical privileges of the University.

## Entrance Requirements

Candidates for graduate degrees must be accepted by the Faculty of the Graduate School of Public Law.

*For the Degree of Master of Laws.*—A Bachelor of Arts or equivalent degree from an approved college or university\* and a Bachelor of Laws or equivalent degree from a law school which is a member of the Association of American Law Schools or is approved by the American Bar Association are required. Candidates for admission must have attained a *B* average on all work done for the Bachelor of Laws degree, except that at the discretion of the Faculty of the Graduate School of Public Law, an applicant otherwise eligible may be accepted upon providing evidence (such as high class standing, *Law Review* experience, positions held, and professional achievements) of ability to do graduate level work. Advanced standing will not be granted for credits earned while a candidate for the first degree in law or for credits earned at another law school. Credits earned as an unclassified

\* The Dean is authorized to make exceptions in appropriate cases.



student will not be applicable toward meeting the requirements for the degree unless specific provision therefor is included in the letter of admission.

*For the Degree of Master of Comparative Law and Master of Comparative Law (American Practice).—*The following are required: (1) the successful completion of and graduation from a course in arts, philosophy, letters, or sciences, equivalent to graduation from a gymnasium, lycee, or liceo; and (2) graduation in law from a recognized foreign university where training was in Civil Law.

*For the Degree of Doctor of Juridical Science.—*The following are required: a Bachelor of Arts or equivalent degree from an approved college or university;\* a Bachelor of Laws or equivalent degree, earned with high rank, from a law school which is a member of the Association of American Law Schools or is approved by the American Bar Association; and outstanding capacity for scholarly work in the field of law. In addition, the applicant must submit an outline of a proposed dissertation topic. This outline should be in some detail, indicating by chapters and divisions within chapters the exact scope of the project. There should also be a bibliography for each chapter listing books, reports, cases, and *Law Review* articles, or notes to be considered. Although such an outline cannot predict every detail of the subsequent research, it must be sufficiently definite to afford the Faculty a basis for evaluating the project.

## Requirements for the Degrees

### MASTER OF LAWS

To be recommended for the degree of Master of Laws (LL.M.) the student must have completed a residence period of not less than two semesters. Such residence should normally be continuous. All requirements for the degree must be completed in this School and in a period not exceeding two years after registration for work for the degree. The student must have completed, with a minimum average of 75, 20 semester hours of courses listed as graduate courses except that in appropriate cases other courses may be approved for inclusion in the program of study if not previously taken.

To be recommended for the degree of Master of Laws (LL.M.) in one of the selected fields of specialization (Government Procurement Law, Administrative Law, Patent and Trade Regulation Law, Foreign Trade and Investment Law, or Taxation) 20 semester hours are also normally required. If, however, at the time of initial registration for one of the specialized Master of Laws programs it appears advisable to require additional work in order to justify the awarding of the degree (as, for example, when the candidate lacks the basic course in Administrative Law or a course in Jurisprudence or both), then the Faculty may require the completion of additional work (not to exceed 4 hours).

### MASTER OF COMPARATIVE LAW

The degree of Master of Comparative Law (M.Comp.L.) is for foreign students who intend to return to their countries. To be recommended

\* The Dean is authorized to make exceptions in appropriate cases.



for this degree the student must have completed a residence period of not less than one academic year. He must have completed satisfactorily 24 semester hours of approved courses of the School or of such other departments of the University as the Faculty of the School shall approve.

#### **MASTER OF COMPARATIVE LAW (AMERICAN PRACTICE)**

The degree of Master of Comparative Law, American Practice (M. Comp.L.(Am. Prac.)) is for foreign students who intend to remain in this country. To be recommended for this degree the student must have completed a residence period of not less than one academic year. He must have completed 28 semester hours of approved courses of the School with a cumulative average of at least 65.

#### **DOCTOR OF JURIDICAL SCIENCE**

To be recommended for the degree of Doctor of Juridical Science (S.J.D.) the student must have completed (1) a residence period of not less than one academic year; (2) a course of study and research—designated by his consultative committee and approved by the Faculty of the Graduate School of Public Law—of no less than 8 semester hours including *Jurisprudence*, unless previously taken, and two seminars in which research papers are required; and (3) an acceptable dissertation. The dissertation must be submitted not later than three years from the date of approval of the dissertation subject. The applicant who proposes to write on a comparative law topic must have a reading knowledge of the language in which the relevant materials are to be found. At the conclusion of his first year of residence, or at such other time as the Faculty may set, the candidate must pass an oral examination in those fields of study selected by the consultative committee. This examination is conducted by the consultative committee and such other members of the Faculty and qualified experts as are selected by the Faculty.

No later than the date specified in the University calendar, the candidate must submit to the Dean of the Graduate School of Public Law three complete copies of the dissertation (including a summary which is to be inserted as an appendix) together with a fourth copy of the summary. It is the responsibility of the candidate for a Doctoral degree to obtain from the Dean a printed copy of the regulations governing the styling and reproduction of the dissertations, which are rigidly enforced. To be acceptable the dissertation must, in the opinion of the examining committee, constitute a substantial contribution to the field of law concerned and be suitable for publication. Additional information will be supplied by the Dean.

The summaries of accepted dissertations will be printed in a numbered issue of the University BULLETIN. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation.



## GENERAL INFORMATION

### DAY AND EVENING CLASSES

MOST DAY CLASSES meet for fifty-minute periods starting at 9:10 A.M., Monday through Friday; Trial Practice Court meets for two-hour periods on Saturday morning.

Evening classes meet for two fifty-minute periods from 5:50 to 7:40 P.M., Monday through Friday. A four-credit course, e.g., Evidence, meets two evenings a week; a three-credit course, e.g., Administrative Law, meets two evenings a week for one half the semester and one evening for the other half; a two-credit course, e.g., Personal Property, meets one evening a week. The evening division conforms to the standards of the day division, the full-time faculty participating in the instruction.

### SUMMER TERM

A term of two sessions, with day and evening classes, is offered in the summer. Continuing students and transfer students may register for either or both sessions. *No beginning students are admitted to the summer term.*

The summer term is shorter than a semester of the academic year, and, as a consequence, a student must attend two and one-half summer terms to receive residence for one academic year or attend one and one-half summer terms to receive residence for a semester.

A maximum of 6 semester hours may be taken each session by day students. Day students receive four-tenths of a semester of residence credit for each session of the summer term in which they are registered for 3 or more semester hours. A maximum of 4 semester hours may be taken each session by evening students. Evening students receive three-tenths of a semester of residence credit for each session of the summer term in which they are registered for 2 or more semester hours.

Summer students planning to take the New York bar examination must register at the beginning of the term for both sessions and must complete both and carry a program of at least ten classroom periods a week for day students and at least eight classroom periods a week for evening students.

### THE LIBRARY

The Law Library of 67,400 volumes contains the official reports of the decisions of the courts of last resort of all states but one prior to the National Reporter System, and of some states complete to date; the National Reporter System, complete; the reports of the United States Supreme Court and lower federal courts, and the reports of federal administrative agencies; Shepard's Citations for the units of



the Reporter System; the English Reports, Full Reprint; the English Law Reports; the Times Law Reports; the Dominion Law Reports; the United States statutes and codes; complete sets of statutes of all the states; the English statutes; the principal English and American digests and encyclopedias; collections of special reports and annotated cases; United Nations documents; and leading textbooks and treaties. Approximately 475 legal periodicals are currently received. A section of the library, consisting of books acquired from National University, is known as the National University Law Collection.

A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card issued upon the payment of fees, must be presented as identification.

Also available to law students are 50,000 bound volumes and 20,000 pamphlets of the former library of the Carnegie Endowment for International Peace, in the fields of international law and relations, history, and economics, in the University Library.

The Law Library, which is on the third and fourth floors of Stockton Hall, is open from 9:00 A.M. to 10:00 P.M., Monday through Friday; from 9:00 A.M. to 5:00 P.M. on Saturday; and from 2:00 to 10:00 P.M. Sunday. Books and other materials do not circulate and must be used in the library.

## Admission

Applicants are urged to submit application forms and complete credentials well in advance of the semester for which they seek admission. Two recent signed photographs and an application fee of \$15 for a degree candidate, \$5 for an Unclassified Student must accompany the application.

For admission procedure for students from foreign institutions, see pages 31 and 32.

## APPLICATION FOR ADMISSION

### The Law School

Beginning students are admitted only at the start of the fall semester.

Forms for application for admission or readmission are available at and should be returned to the Office of the Dean of the Law School, 720 Twentieth Street NW., Washington, D.C. 20006.

*Bachelor of Laws.*—To provide time for the evaluation of credentials of beginning students, all papers, including the Law School Admission Test score, should be received by May 1. This means that the November, February, or April Law School Admission Test should be taken. (See "Entrance Requirements for the Degree of Bachelor of Laws," pages 17 and 18.)

All papers of transfer students should be received by the Office of the Dean not later than August 1 for the fall semester, December 1 for the spring semester, and one month prior to registration for the summer session for which application is made.

*Unclassified Student.*—Application for admission as an Unclassified Student (see page 18) should be received, with necessary credentials, at least one month prior to the first day of registration for the semester or summer session for which application is filed.

## The Graduate School of Public Law

Students are admitted to the Graduate School of Public Law at the beginning of the fall semester, the spring semester, or any of the summer sessions.

Forms for application for admission or readmission are available at and should be returned to the Office of the Director of Admissions, The George Washington University, Washington, D.C. 20006.

*Graduate Degrees.*—Application for admission as a candidate for a graduate degree and all required credentials must be received by August 1 for the fall semester, December 1 for the spring semester, and one month prior to registration for the summer session for which application is made.

*Unclassified Student.*—Application for admission as an unclassified student (see page 25) should be received with necessary credentials at least one month prior to the first day of registration for the semester or summer session for which the application is filed.

*Continuing Legal Education Student.*—Continuing Legal Education Students file a simplified form at any time prior to the first day of classes of the term concerned. No application fee is required and no credentials are necessary.

### Students from Foreign Institutions

Application, required records, and scores on the *Test of English as a Foreign Language* (see details below) must be received no later than three months before the opening of the semester for which admission is requested.

#### REQUIRED RECORDS

*If applying to the Law School, records should be sent to the Dean of the Law School. If applying to the Graduate School of Public Law, records should be sent to the Office of the Director of Admissions of the University.*

Applicants should request each educational institution previously attended to send directly to the Dean of the Law School or to the Office of the Director of Admissions, as appropriate (see above), official credentials of: subjects studied; grades received; examinations passed; and diplomas, certificates, and degrees received from secondary schools and all colleges and universities attended. Records of required state examinations and certificates are also needed. The records presented become the property of the University and cannot be returned. These credentials should be in the language in which the institution maintains its official records. If these records are in a language other than English, the copies sent should be accompanied by an English translation. If it is not possible for the institutions to provide this translation, students will be expected to pay the nominal cost of necessary translation which will be arranged by The George Washington University.

#### LANGUAGE TEST

Students from countries whose official language is not English are required to take the *Test of English as a Foreign Language*. Students are responsible for making arrangements for taking the test and should



address inquiries to: TOEFL, Educational Testing Service, Princeton, New Jersey 08540, U.S.A. The completed application form should be returned to the Testing Service and should reach Princeton no later than one month before the date of the test for which application is made. A \$10 test fee, which should be remitted with the application, entitles the student to have his test score sent to three different institutions. Registration for the *Test of English as a Foreign Language* does not constitute application for admission to The George Washington University.

It is recommended that the examination be taken in the fall or winter to qualify for admission at the beginning of the following academic year.

The Bulletin of Information, obtainable without charge, contains descriptions of the test as well as rules regarding application, fees, reports, and the conduct of the test; lists of examination centers; examination dates; and application blank. On the application for the test, the student should specify that the score be sent to the appropriate office (see the italic paragraph under "Required Records," above).

### READMISSION

A student who was previously registered in the Law School or the Graduate School of Public Law but did not attend during the most recent semester (summer term excluded) should file an application for readmission. Closing dates for readmission are the same as those for admission, see above.

If the student has attended one or more higher institutions during his absence from the University or if he applies as a degree candidate and was previously a nondegree student, he must have complete, official transcripts sent (1) to the Dean of the Law School, if applying to the Law School; (2) to the Office of the Director of Admissions of the University, if applying to the Graduate School of Public Law.

### Registration

Before attending classes each student must present himself in person for registration. No student will be registered in the Law School or the Graduate School of Public Law until proper credentials have been filed and approved (see "Admission").

No registration is accepted for less than a semester or one summer session.

A student may not register concurrently in The George Washington University and another institution without the prior permission of the dean of the college, school, or division in which he is registered in this University. Registration in more than one college, school, or division of the University requires the written permission of the deans concerned, *prior to registration*. Allowance of credit for work done concurrently at another institution will be at the discretion of the appropriate dean.

### ELIGIBILITY FOR REGISTRATION

No student who is suspended or whose record is not clear for any reason is eligible to register.

*New Student.*—Upon receipt of a letter of admission from the appro-



priate office, a new student is eligible for registration on the stated days of registration.

**Readmitted Student.**—A student previously registered who was not registered for courses during the preceding semester or summer session, must apply for and receive a letter of readmission (see "Readmission," page 32) before he is eligible for registration. A student registered for the spring semester of 1964-65 need not apply for readmission for the fall semester 1965-66. Such a student is a "Continuing Student."

**Continuing Student.**—A student registered for courses in the immediately preceding semester of the academic year is eligible to register upon presentation of his student identification card from the previous semester. The student registered for 1965 summer session courses, and not restricted to summer registration, is eligible for registration for the 1965-66 fall semester upon presentation of his 1965 summer session student identification card.

#### TIME AND PLACE OF REGISTRATION

Registration is held in Stockton Hall, 720 Twentieth Street NW., during the following periods: *fall semester*, September 16 and 17 from 12:00 to 8:00 P.M.; September 18 from 10:00 A.M. to 1:00 P.M. *Spring semester*, January 27 and 28 from 12:00 to 8:00 P.M.; January 29 from 10:00 A.M. to 1:00 P.M.

A late-registration fee of \$5 is charged each student who is permitted to register after the regular registration days.

Registration may be changed only with the permission of the Dean.

### Fees and Financial Regulations

The following fees were adopted for the academic year 1965-66.

#### Tuition Fees

Bachelor's, Master's, and Continuing Legal Education study:	
Full-time program (11 hours or more), each semester	\$650.00
Part-time program, each semester hour	46.00
Doctor of Juridical Science,* including the final examination	1,350.00

#### Special Fees

Application fee (degree candidate), nonrefundable	15.00
Application fee (unclassified student), nonrefundable	5.00
Application fee for room reservation	100.00
Special fee (Student Bar Association activities, <i>Law Review</i> , and other services), charged each student (except students registered for "continuous registration") for each semester or any part thereof except the summer term	10.00
Graduation fee	25.00
Fee for printing summary of doctoral dissertation	85.00
Fee for special examinations, for each subject	5.00
Late-registration fee, for failure to register within the designated period	5.00

\* The tuition fee is to be paid at the rate of \$337.50 a semester for four successive semesters, exclusive of the summer term or terms. No "continuous registration" fee will be charged if a third year is needed for completion of the degree requirements. If the Faculty should approve an extension of time, the student must maintain continuous registration and pay the continuous registration fee.

Change fee, for each change in program involving one course or more than one course.....	2.00
Continuous Registration fee, to maintain "continuous registration" during any semester of absence from the University or after completion of tuition requirements.† Due and payable on the official days of registration.....	46.00
Service fee for deferred payment plan (See "Payment of Fees" below) .....	5.00
Reinstatement fee, for reinstatement after financial suspension .....	10.00
Transcript fee, for each transcript of record.....	1.00

Registration in the University entitles each student to the following University privileges: the services of the Placement Office; the use of University library; gymnasium privileges; admission to all athletic contests, unless otherwise specified; subscription to the *University Hatchet*, the student newspaper; admission to University debates; medical attention and hospital services as described under Health Services. These privileges terminate and a student is no longer in residence, when he withdraws or is dismissed from the University.

### PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or attend classes until all fees are paid.

Tuition and fees for each semester are due and payable in full at the time of each registration.

However, a student registered for six semester hours or more may sign a contract with the Office of the Cashier at the time of each registration permitting him to pay one-half of the total tuition and fees (except for fees payable in advance) at the time of registration and the remaining half on or before November 3, 1965 (for the fall semester) and March 16, 1966 (for the spring semester). A Service Fee of \$5 will be due and payable at the time of registration for the use of this deferred payment plan. The University will not obligate itself to notify the student, in advance of the payment-due date, for the second half of the semester charges. Students who fail to make any payment when due will be automatically suspended and may not attend classes until they have paid all accrued fees and a \$10 Reinstatement Fee and have been officially reinstated by the Office of the Cashier.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

To assist in financing the costs of a law school education, various plans are available. The University offers educational loan plans through the Girard Trust Exchange Bank in Philadelphia, Pennsylvania; Funds for Education, Inc., Manchester, New Hampshire; and The Riggs National Bank, Washington, D.C.

Although similar in purpose, these plans vary somewhat in coverage and conditions. One year and multiple year plans are available. Insur-

† Payment of the continuous registration fee entitles the student who is granted leave of absence to return and continue his work toward a degree under the academic requirements which were in force at the time of his first registration. The continuous registration fee applies toward neither financial nor residence requirements for the degree.



ance covering the life and health of the sponsor is provided through these plans.

Loan funds are also available through the National Defense Student Loan program, through the United Student Aid Funds, Inc., and through the plan organized by the American Bar Association. Moreover, there are some smaller loan funds available for law students under certain circumstances.

Full details concerning these various plans are available in the Office of the Vice President and Treasurer. Information may also be obtained from the Dean of the Law School.

## WITHDRAWALS AND REFUNDS

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the dean of the school. Notification to an instructor is not an acceptable notice.

In authorized withdrawals and changes in schedule, cancellations of semester tuition charges and fees will be made in accordance with the following schedule:

1. *Complete withdrawal from the University:*

FALL SEMESTER

Withdrawal dated on or before September 24, 1965 . . . 90 per cent  
Withdrawal dated September 27 to October 8, 1965 . . . 75 per cent  
Withdrawal dated October 11 to October 22, 1965 . . . 50 per cent  
Withdrawal dated after October 22, 1965 . . . . . none

SPRING SEMESTER

Withdrawal dated on or before February 4, 1966 . . . 90 per cent  
Withdrawal dated February 7 to February 18, 1966 . 75 per cent  
Withdrawal dated February 21 to March 4, 1966 . . . 50 per cent  
Withdrawal dated after March 4, 1966 . . . . . none

2. For a *change in status from full-time to part-time student* or for *partial withdrawal by a part-time student*, the above schedule applies to the difference in charges between the original program and the adjusted program continuing in effect.
3. A student enrolled in a full-time program, who drops or adds a course and continues to be in a full-time program, will have no financial adjustments of tuition made other than those involving course fees.

In no case will tuition be refunded or reduced because of absence from classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this be credited to another semester.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

Students are encouraged to provide their own cash funds until they can make banking arrangements in the community.

## Fellowships, Scholarships, Prizes, Loan Funds

*Law School Research Assistantships.*—Available each year to students currently enrolled in the Law School, preferably to applicants who are completing the second year. Each assistant receives an annual stipend.



Awards are made on the basis of academic standing, financial need, and capacity for leadership. Research assistants have duties similar to those of teaching fellows. Applications should be submitted to the Dean of the Law School not later than May 1.

*Graduate School of Public Law Teaching Fellowships.*—Available each year to prospective candidates for the Master of Laws degree. Each fellow receives an annual stipend of \$4,000, plus tuition for the academic year. Teaching fellows follow an approved program of study and research, assist members of the Faculty in the guidance of first-year students, and supervise student work in legal bibliography and the drafting of legal instruments. Upon satisfactory completion of the year's work, a fellow is recommended for the degree of Master of Laws. Applications should be submitted to the Dean of the Graduate School of Public Law not later than March 15.

*Mary Covington Memorial Scholarship (1961).*—Established by Mary S. English in memory of her aunt, Mary Covington, LL.B. 1922, provides tuition aid to a deserving evening student in the Law School on the basis of scholastic achievement in the first-year course.

*Charles Worthington Dorsey Memorial Scholarship (1947).*—Memorial to Charles Worthington Dorsey, Bachelor of Laws, '81, Master of Laws, '82. A full-tuition scholarship for the course leading to the degree of Bachelor of Laws, awarded to a needy and promising graduate of this University with a Bachelor of Arts or equivalent degree. The scholarship is awarded ordinarily once every three years.

*Law School Honor Scholarships.*—Two scholarships available each year to students entering upon full-time study in the Law School. Each scholarship provides a cash award for the first year in addition to full tuition for all three years. These scholarships are awarded on the basis of outstanding college records, both academic and extracurricular; Law School Admission Test scores; and need. To retain the scholarship for the second and third years, a *B* average, both for each year and cumulative, must be maintained. Application must be made before March 1 to the Dean of the Law School.

*Law School Research Scholarships.*—Available each year to students currently enrolled in the Law School, preferably to applicants who are completing the second year. Scholarship awards are made on the basis of academic standing, financial need, and capacity for leadership. Applications should be submitted to the Dean of the Law School no later than May 1.

*Law School Trustee Scholarships.*—Twelve scholarships awarded each year to entering students, for full three-year tuition in the morning division of the Law School. Candidates must have demonstrated qualities of leadership in addition to scholastic attainment. To retain the scholarship, the successful candidates must maintain a *B* average, both for each year and cumulative. Application must be made before March 1 to the Dean of the Law School.

Tuition scholarships are also available to continuing second- and third-year full-time students with averages of 75 and above. Applications should be made to the Dean of the Law School prior to July 1. Scholarships are awarded after spring-semester grades are reported.

*Richard Paul Momsen Fund (1964).*—Bequest of Richard Paul Momsen (LL.B. 1912) for scholarships for Brazilian law students or Brazilian law graduates studying United States law.

*Phi Delta Delta Scholarships (1959).*—Zeta Chapter of Phi Delta Delta Legal Fraternity (International), provides tuition aid to a woman student in the second year of the Law School, who excelled in scholastic achievement and service to the Law School in her first year.

*Charles Glover Prize.*—Established by Charles Carroll Glover, Jr., an Honorary Trustee of the University, in memory of his great-grandfather, an illustrious member of the bar of the District of Columbia. Consists of selected law books. Awarded annually to the student in the Law School who has attained the highest average grade in the third-year, full-time course.

*Kappa Beta Pi Prize.*—A copy of Blackstone's *Commentaries* or a legal dictionary awarded annually by Eta Alumnae Chapter to the woman law student who attains the highest average for the freshman year.

*John Bell Larner Prize.*—By bequest, a medal is awarded annually to the member of the graduating class in the Law School who attains the highest average grade in the entire course for the degree of Bachelor of Laws.

*American Security and Trust Company Award.*—A cash award to a graduating senior for the most effective work in the course in estate planning.

*Lawyers Title Award.*—A \$100 prize established by the Lawyers Title Insurance Corporation is awarded annually to a graduating senior for excellence in the law of real property.

*John Ordronaux Prizes.*—By bequest, \$75 is awarded annually to the student who has attained the highest average grade in the first-year, full-time course; and \$75 to the student who has attained the highest average grade in the second-year, full-time course.

*Loan Funds.*—Through the generosity of friends of the University a number of loan funds are available to students in the Law School. Among them are the Law Association Loan Fund, the classes of 1912, 1921, 1929, 1933, 1935, 1936, 1937, 1938, 1939, 1941, 1942, 1945, 1950, 1951, 1952, 1953, 1959, 1960, 1961, 1962, 1963, 1964 Loan Funds, the George R. Beneman Loan Fund, the Robert M. and Mary McConnel Cooper Loan Fund, the Horace L. Lohnes Memorial Assistance Fund, the Jephson Educational Trust Loan Fund, Mike Pelekiri Loan Fund, and The George Washington University Law Association Loan Fund. Applications for loans should be made in the Office of the Dean.

## Regulations

### AMOUNT OF WORK

Students without substantial outside employment may take a program of studies of 14 hours a week. Such students may take courses in the evening only if they are not available in the daytime and if a majority of the hours taken are in day courses. The Dean is authorized to approve 15-hour programs in exceptional cases. Students with 20



hours or more of outside employment whether in the day or evening division, must take a limited program of studies not exceeding 10 hours a week. Students taking a majority of their classes in the evening may not take more than 10 hours a week; the minimum load is 8 hours, except in special cases where 6 may be approved for a limited time. A minimum schedule of 10 hours in the day division is required except in exceptional circumstances when a reduced program is authorized by the Dean for continuing students.

Students taking more than 8 hours in the day division or 4 hours in the evening division must have the permission of the Dean to take a Bar Review course.

#### ATTENDANCE

Regular attendance at classes is required and is necessary for successful work. A student who is deficient in class attendance in any course may be barred from taking the examination, and the course must be repeated.

#### CHANGES IN PROGRAM OF STUDIES

A student may not drop or add courses or change from one section to another of the same course without the approval of the Dean.

#### RESEARCH PAPER IN LIEU OF EXAMINATION

The preparation of a research paper is required in lieu of an examination in the seminars and in some courses, as indicated in the course descriptions by (RP). The research paper must be submitted by the last day of classes of the semester; for sufficient reason, the instructor may extend this time to the end of the examination period. In general, a qualified first-degree student may register for one such course; in special cases he may register, with the approval of the Dean, for two, as for *Current Decisions* and one other.

#### EXAMINATIONS

Written examinations are held at the end of most courses. Every student is required to take the regular examinations unless excused. No excuse for absence will be granted except by the Dean and then only for illness or other emergency. Application for excuse must be made in writing not later than one month after the date of the examination. An entry of *I*, incomplete, will be made on the record of a student thus excused. To receive credit for the course, he must take the next regularly scheduled examination. The examination may not be taken after exclusion for low scholarship.

Permission to take an examination before the regularly scheduled date will not be granted. Permission to take a postponed examination is limited to the situation provided for in the preceding paragraph.

A special examination will be granted only to a student entitled to take a postponed examination, who is a candidate for a degree to be conferred at a convocation which precedes the next regular examination in the subject. Written application, showing sufficient cause, should be addressed to the Dean, and approval will be granted at his discretion.

If a student fails to take an examination, a grade of zero will be



recorded unless he has been excused from the examination as provided above or has obtained the Dean's permission to drop the course.

## GRADES

Grades are given in numerical terms which are equivalent to letter grades according to the following scale: 85-100, *A*, excellent; 75-84, *B*, good; 65-74, *C*, satisfactory; 55-64, *D*, poor—below standard for graduation; below 55, *F*, failure. A student who has been excused from failure to take a regularly scheduled examination is given the grade of *I*, incomplete, and a student who has been barred from taking an examination because of excessive absences is given the grade of *EA*. See "Examinations" above, for grade upon failure to take an examination. Grades between 65 and 100 indicate that the work has been completed and credit given for the courses. Grades between 55 and 64, however, do not represent satisfactory work and adversely affect a student's cumulative average. No credit is given for grades below 55.

A student may not repeat a course he has failed.

The cumulative average of a student includes all grades in all courses taken while he is a candidate for a particular degree. When a course is repeated (see "Academic Dishonesty," page 41) both the first grade and the subsequent grade or grades are counted in the cumulative average.

## EXCLUSION AND PROBATION FOR POOR SCHOLARSHIP

*Candidates for the Degree of Bachelor of Laws.*—A student will be excluded who fails in courses aggregating 8 or more semester hours in one semester or in two successive semesters, or who fails in courses aggregating 10 or more semester hours during his period of law study. A student subject to exclusion under this provision who is currently registered will be permitted to complete the work of the semester.

A student not subject to exclusion under the foregoing rule who at any time fails to maintain a cumulative average of at least 65 will be placed on probation. A student on probation may at the discretion of the Dean be required to reduce his program of study. A student on probation will be excluded if he has not raised his cumulative average to at least 65 by the end of the second semester following the one in which his average fell below 65. If a student on probation attains a cumulative average of at least 65 by the grades received during the semester his status will then become clear. A maximum of three semesters of probation is allowed. Thus, if a student whose status has become clear after two semesters of probation subsequently goes on probation, he will be allowed only one semester of probation in which to raise his average to at least 65.

In special cases, a student who has been excluded and who can demonstrate that his low grades were due to circumstances beyond his control and that he has the capacity to pursue the study of law with a definite likelihood of success, may be readmitted by the Faculty subject to such conditions as may be imposed.

*Candidates for Graduate Degrees.*—A candidate for one of the graduate degrees whose work is not satisfactory in the opinion of the Faculty, taking into consideration the requirements and standards for the degree, may, by action of the Faculty, be excluded at the end of the semester for which he is currently registered.

*Unclassified Students.*—An unclassified student whose work is not satisfactory in the opinion of the Faculty may, by action of the Faculty, be excluded at the end of the semester for which he is currently registered.

#### **SUMMER SCHOOL CREDIT**

Students planning to attend summer school sessions at other law schools and desiring to use credits obtained at such schools in their course at this Law School must first have the courses they wish to take approved by the Dean. In no event will credits be recognized in excess of those which might be obtained in a similar period in this School.

#### **TRANSCRIPTS OF RECORD**

Official transcripts of student records will be issued on request of the student or former student. A fee of one dollar is charged for each transcript. No transcript will be issued for a person who does not have a clear financial record.

#### **CONTINUOUS REGISTRATION**

Degree candidates are expected to maintain continuous registration until *all* degree requirements are satisfied. Students who have completed course registration maintain continuous registration by paying the "continuous registration" fee (see page 34). By failing to register for one semester or more, the student breaks his registration and must be readmitted (see "Readmission," page 32). A "Readmitted Student" is required to satisfy the curriculum requirements existing at the time of his readmission.

Students must be registered during the summer if they elect to take courses, are taking required examinations, are receiving guidance toward theses or dissertations, or are expecting to graduate at the end of the Summer Sessions.

#### **GRADUATION REQUIREMENTS**

Diplomas are awarded at a February Convocation, a June Commencement, and in September.

To be recommended by the Faculty for graduation a student must have met the admission requirements of the school; completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered; and be free from all indebtedness to the University. Registration, either for course work or on the "continuous registration" fee basis, is required for the semester or summer session immediately preceding the awarding of the degree.

*Application for Graduation.*—Application for graduation must be filed and the appropriate fee paid at the time of registration for the last semester or summer session of the final year. Students completing degree requirements during the Summer Sessions will be awarded diplomas (no formal Convocation) September 30, 1965 *provided* they have completed all degree requirements and have applied for graduation as a part of registration for the Summer Sessions.



## **ACADEMIC DISHONESTY**

Evidence of dishonesty on the part of any student will result in his suspension by the Dean.

A student found guilty of dishonesty will be excluded and will be deprived of credit for all courses in which he is enrolled during the semester in which the dishonest act occurs. A disciplinary grade of "Failure—Academic Dishonesty" will be recorded for each such course, and this grade will be employed in computation of the cumulative average.

If the student excluded for academic dishonesty should be readmitted, he may be required to repeat for grade all courses for which a disciplinary grade has been recorded, and both the grade earned on repetition and the disciplinary "Failure—Academic Dishonesty" grade will be employed in computation of the cumulative average.

## **RIGHT TO CHANGE RULES**

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

## **RIGHT TO DISMISS STUDENTS**

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Faculty) for subsequent registration.

The right is reserved by the University to dismiss or exclude any student from the University or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

## **PROPERTY RESPONSIBILITY**

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

## **Health Services**

The Health Services Staff assists students with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open from 9 A.M. to 5 P.M., Monday through Friday, during the academic year and Summer Sessions, with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge. For night and weekend emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Services, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.



Medical privileges include: (1) three visits in any one illness by a member of the Health Services Staff, office or residence (District of Columbia); (2) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Services.\* All additional hospital charges for operating room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye refraction and provision of glasses; orthopedic examinations and application of cast or other appliance; laboratory and X-ray work; and surgical operations must be paid by the student.

This medical benefit applies only to illness or disability incurred while currently enrolled in the University. It does not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Services is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Services has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has severed his connection with the University is ineligible for medical benefits; (4) hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the physical education departments.

## **Student Services**

### **RESIDENCE HALLS**

Complete information concerning the University's residence halls is available at the Office of the Dean of Men or the Office of the Dean of Women, The George Washington University, Washington, D. C. 20006.

Information concerning off-campus housing near the University may be obtained at the Office of the Dean of Men. The reservation of rooms in private houses must be made by students.

Admission to the University does not include a room reservation. A separate application for a room should be made well in advance (for the fall semester by May 10, or in the case of later admissions within two weeks after notification by the University). Rooms are leased for the academic year, and a deposit of \$100, which is credited toward the fall semester room charge, is required. If notice of withdrawal or cancellation of room reservation is received prior to June 1, \$50 of the deposit will be refunded. No refunds will be made after June 1, regardless of the date of application. Room rentals are payable in advance by the semester.

\* See rule (4) for exception.

For Men:	Room and Food Service	Room only
Adams Hall		
double room .....	\$900	—
triple room .....	850	—
Crawford Hall .....	900	—
Calhoun Hall .....	900	\$400
Madison Hall (Graduate and Professional Students) .....	920	420
Welling Hall .....	820	320
For Women:		
Women's Residence Hall .....	\$950	—
Strong Hall		
double room .....	950	\$450
single room .....	1,035	535

#### FOOD SERVICE

Residents of the Women's Residence Hall and all resident freshman men under twenty-one are required to participate in the Food Service Plan. The Food Service Plan is optional for all other residents. Meals may be taken either at the Women's Residence Hall or in the Residence Hall dining room at the Student Union. Well-balanced meals are served cafeteria style seven days per week (20 meals). Food service payment does not cover University holidays or vacation periods.

#### STUDENT EMPLOYMENT

The Law School takes a continuing interest in the placement of its students and maintains a placement service for that purpose. In addition, the University Placement Office, 2114 G Street NW., provides assistance to students seeking full- and part-time employment. This office maintains a registry of positions locally and nationally available and refers qualified applicants for consideration. Information is also available on Civil Service examinations.

A day student taking the regular program (more than ten hours) must limit outside employment to less than twenty hours. (See "Amount of Work," pages 37-38). It is urged that day students refrain from engaging in outside employment during their first semester or first year in Law School. Although work in some special areas may contribute to the learning and experience of the student, as a general rule it will compete with time needed for adequate study and preparation, which are at the heart of a good legal education. The evening program is planned to provide a desirable reconciliation of these competing considerations but results in a more demanding schedule for the student.

#### PLACEMENT SERVICE

The Law School and the Graduate School of Public Law take a continuing interest in the placement of their graduates in private practice and governmental service, as well as with industry and commerce. The Deans, the Faculties, and the University Placement Office cooperate in collecting information from alumni, law firms, and government agencies concerning opportunities in legal positions throughout the country. Senior law students and recent graduates are urged to keep in touch with the Law School Placement Office.





## COURSES OF INSTRUCTION

### In the Law School and the Graduate School of Public Law

THE COURSES OF INSTRUCTION listed below are subject to change. The University reserves the right to withdraw any course announced.

The number of hours of credit given for the satisfactory completion of a course is indicated in parentheses after the name of the course. Thus, a year course giving two hours of credit each semester is marked (2-2), and a semester course giving two hours of credit is marked (2).

Courses and seminars marked (RP) require the preparation of a research paper in lieu of an examination.

Day classes begin at 9:10 am. Evening classes begin at 5:50 pm.

#### UNDERGRADUATE COURSES

Qualified third-year students may, with the permission of the Dean, take graduate courses.

#### REQUIRED COURSES—FIRST YEAR

- 110 **Constitutional Law** (4) Mayo, Dixon, Miller, Barron, H. Green  
Basic principles of American constitutionalism; judicial function in constitutional cases; implementation of doctrines of separation of powers, federalism, limited government; development and exercise of national powers; introduction to civil rights and liberties. (Spring—day and evening.)
- 115-16 **Contracts I-II** (2-4) Freedman, Schiller, Pock  
Legal remedies of contracting parties, including damages in contract and quasi-contract, specific performance, reformation, rescission, remedies in tort; acts creating and terminating contractual rights, including offer and acceptance, mistake, problems of proof; function of consideration; conditions; assignments; third-party beneficiaries; effect of changed circumstances; protection of the client's interests upon breach or threat of breach by the other party. Emphasis on problems of analysis, draftsmanship, adversary method. (Academic year—day and evening; summer 1965.)
- 125 **Criminal Law and Procedure** (4) D. Green, Starrs, Robinson  
Origin and purposes of criminal law; elements of criminal liability; mental disorders; crimes against the person, property, and against both; statutory offenses; criminal procedure, with consideration of Federal Rules of Criminal Procedure. (Fall—day; spring—evening.)
- 135 **Legal Method and Legal System** (3) Fryer, Davison, Seidelson, Brown  
Introduction to substantive and procedural law dealing with basic concepts; training in method and technique of case law and legislation using modern case records; practice in use of law books and in legal writing; importance of language in law; legal reasoning and use of precedents under doctrines

of stare decisis, law of the case, and res judicata; development of Anglo-American legal system; organization of judiciary and bar, stressing enforcement of ethical standards. (Fall—day and evening.)

- 145 Personal Property (2)** Kayton, Clingan, Potts, Park  
Concepts, meanings of term "possession," methods of acquiring ownership, problems in bailment cases, basic principles of liens and pledges. (Fall—day and evening.)

- 150 Real Property (4)** Benson, Schiller, Starrs, Brown  
Historical background of the law of estates and conveyancing; types of estates; dower and curtesy; landlord and tenant relationship; concurrent estates; future interests at common law and after the Statute of Uses; Rule Against Perpetuities; incidents of divided ownership, as waste; natural rights. (Fall—evening; spring—day; summer 1965.)

- 161-62 Torts I-II (3-2)** Merrifield, Seidelson, Park  
Liability for harm to person or property. Intentional torts, negligence, nuisance, products liability, misrepresentation, defamation, and invasion of privacy; fault and other bases for shifting losses; causation; damages; effects of liability insurance; problems under Federal Tort Claims Act. (Academic year—day and evening.)

#### OTHER REQUIRED COURSES

- 202 Administrative Law (3)** Davison, Miller, Park  
Position of administrative process in separation of powers, including status of administrative personnel, administrative hearings, judicial scrutiny of administrative action, discretion, rule-making—particularly as relating to federal administrative agencies. (Spring—day and evening; summer 1965.)

- 215 Civil Procedure (4)** D. Green, Sharpe, Barron  
Mechanics of litigation—rules which govern process by which rights and duties studied in substantive law courses are enforced: pleadings, discovery, pre- and post-trial motions, jurisdiction and venue, equity jurisdiction and trial by jury, former adjudication. Emphasis on Federal Rules of Civil Procedure but principles and main problems indigenous to all procedural systems are developed. (Fall—day and evening; summer 1965.)

- 240 Evidence (4)** Fryer, Seidelson, Robinson  
Preparation and presentation of evidence, including proof of writings; qualification and examination of witnesses with emphasis on impeachment; privilege; opinion testimony; determination of relevancy; demonstrative, experimental, scientific evidence; application of the hearsay rule. (Spring—day and evening; summer 1965.)

- 365 Patent Trial Practice Court (2)** Brown  
Practice before United States Court of Customs and Patent Appeals and federal courts. Prerequisite: forty-two semester hours, including Law 215. Prerequisite or concurrent registration: Law 240 and either Law 358 or 359. The Trial Practice Court requirement may be satisfied by this course or Law 385. (Fall and spring—day and evening.)

- 385 Trial Practice Court (2)** Jackson, Edgerton, Herrick, Monk, Ryan, Beard, Hart, Kendrick, Skinker, Clingan  
Trial of assigned cases, trial tactics and techniques, pre-trial and court room procedures pursuant to Federal Rules. Prerequisite: forty-two semester hours, including Law 215. Prerequisite or concurrent registration: Law 240. The Trial Practice Court requirement may be satisfied by this course or Law 365. (Fall and spring—day and evening.)



## ELECTIVE COURSES

- 205 **Appellate Practice and Procedure (2)** Freedman  
Students participate in preparing an actual criminal case on appeal, starting with review of trial transcript and culminating with preparation of brief and oral argument before United States Court of Appeals for the District of Columbia Circuit or the Supreme Court of the United States. Appellate practice and procedure studied through texts; consultation with appellate judges, law clerks, and attorneys with cases pending on appeal; observation of arguments in the Supreme Court and the Court of Appeals. Admission by permission of the instructor. (Not offered 1965-66.)
- 209 **Business Associations I (2)** Law, Barron  
Legal principles concerning association in business by agency, partnership, other unincorporated forms, and corporations: creation, form and nature of agency, partnership and corporation; basic principles of agency and partnership and introductory related principles of corporation law. (Fall—day and evening; summer 1965.)
- 210 **Business Associations II (4)** Kirkpatrick, Manne  
Corporate law, with emphasis on operations and financing of corporations. Control of corporations, action by corporate directors, officers, shareholders. Control devices. Directors' and shareholders' duties of care and loyalty, insiders' transactions in shares of the corporation. Derivative suits, kinds of shares, dividends, corporate distributions. (Spring—day and evening; summer 1965.)
- 219 **Commercial and Investment Paper (3)** Albert  
Bills of exchange, promissory notes, checks, bonds, certificates of stock, other forms of commercial and investment paper in the context of their business function and legal setting under common law and uniform laws, including proposed Uniform Commercial Code. (Spring—day and evening; summer 1965.)
- 224 **Sales and Sales Financing (3)** Albert  
Law relating to the sale and distribution of goods and to the security financing devices utilized in this connection, with particular attention to the effect of existing and proposed uniform laws. (Fall—day and evening.)
- 235 **Domestic Relations (2)** Potts, Seidelson  
Marriage, annulment, and divorce; adoption and custody of children; economic relations. (Spring—day and evening; summer 1965.)
- 238 **Equity (2)** Hogan, Starrs  
Nature of equity jurisprudence through analysis of selected problems in equity; historical development of equity, including problems of merger of law and equity; use of equity jurisdiction offensively and defensively, including multi-party actions, injunction of executive and legal actions, equitable abstention; emphasis on fashioning of equitable remedies. (Spring—day and evening; summer 1965.)
- 243 **Federal Jurisdiction (2)** Sharpe, Barron  
Relationship of federal courts to Congress and to the states, through analysis of cases dealing with federal judicial function (including problems of advisory opinions, standing to litigate, justiciability), federal questions in federal courts, federal review of state court decisions (including relation between state and federal substantive law, procedural problems in exercising review, application of law to fact). (Spring—day and evening; summer 1965.)



- 251 **Insurance (2)** Schiller  
A primary risk distributing medium and the rules by which legislative, administrative, judicial bodies seek to promote its benefits and avert its dangers. Includes insurance marketing, insurable interest, subrogation, transfer of insurance benefits to nonpolicyholders, coverage and other insurance policy provisions, disposition of claims. (Fall—day and evening; summer 1965.)
- 254 **International Law and World Order (3)** Mallison  
Traditional content of introductory course in international law presented in context of values and institutions of world community; emphasis upon national states as participants in decision-making processes with consideration also of individuals, international public organizations, political parties, pressure groups, private associations; analysis of range of available sanctions; roles and effects of international agreements under United States Constitution. Complements but does not repeat material in Law 391. (Fall—day and evening; summer 1965.)
- 259 **Labor Law (3)** Merrifield  
Law governing labor-management relations, organization and representation of employees, regulation of economic weapons, enforcement of collective bargaining agreements, interunion and intraunion relations. (Spring—day and evening; summer 1965.)
- 265 **Law and Accounting (2)** S. Cohen, Cibinic, Eichler  
Study of fundamental accounting principles with emphasis on corporation accounting; legal and accounting implications of specific items in financial statements of corporations; inventory adjustments; corporate transactions, distributions, capital adjustments. (Spring—day and evening.)
- 270 **Legislation (2)** Nutting  
Legislative process and roles of participants in the process; operation of United States Congress and state legislatures, including fact finding, organization, procedure. Statutory interpretation emphasized to provide foundation for more advanced courses. (Spring—day and evening; summer 1965.)
- 274 **Taxation—Federal Estate and Gift (2)** Kramer, Weaver, Hambrick  
Survey of substantive provisions of federal estate and gift tax laws, including inter vivos transfers, transfers in contemplation of death, joint interests, life insurance proceeds, property subject to powers of appointment, marital deduction and split gifts; tax procedure. (Fall—day and evening.)
- 279 **Taxation—Federal Income (3)** Hambrick  
Survey of substantive provisions of federal income tax, including concept of gross income, provisions affecting taxation of family and individual transactions, limitations on allowable deductions, sales and dispositions of property, problems of capital gains taxation, nontaxable exchanges. (Fall—day and evening; summer 1965.)
- 285-86 **Trusts and Estates I-II (3-3)** Weaver, Law  
Noncommercial transfers of wealth at death or during life. *First half:* essential elements and formalities for creation of trusts and execution of wills, revocation and alteration, grounds for contest, limits on property owner's power to control, intestate succession. *Second half:* dispositive provisions, common questions of construction, future interests problems, administration of estates and trusts, charitable trusts. Prerequisite to Law 285: Law 150; to Law 286: Law 285. (Academic year—day and evening; summer 1965.)
- 295 **Unfair Trade Practices (3)** Weston  
Unfair trade practices at common law and under statutes; trademarks, trade names; copyright law; misappropriation of ideas; protection of competitors

and consumers against false advertising under Federal Trade Commission Act; resale price maintenance under state Fair Trade Acts; state sales-below-cost statutes; Robinson-Patman Price Discrimination Act; miscellaneous business practices. (Fall—day and evening.)

- 302 **Admiralty (2)** Sharpe  
Doctrines originating in admiralty courts—prize, maritime liens, salvage, general average, negligence in ship collisions and otherwise, maintenance and care, unseaworthiness; maritime law from legislative origins—personal injury and death remedies, limits on shipowners' liability, regulation of carriage of goods and persons; admiralty jurisdiction and maritime law in the federal system. (Spring—evening.)
- 307 **Comparative Law (3)** Davison  
Civil Law System, general introduction to foreign law as exemplified by Roman Law and French and German Civil Codes, comparative study of administration of justice and legal institutions. Delictual and contractual obligations. (Fall—day; summer 1965.)
- 309 **Conflict of Laws (3)** Dixon, Seidelson  
Legal problems arising from occurrences transcending state or national boundaries; jurisdiction; foreign judgments; constitutional influences; theoretical bases of choice of law principles and their application to specific fields, including torts, contracts, property, family law, administration of estates, business associations. (Fall—day and evening; summer 1965.)
- 311 **Copyright Law (2)** Cary  
Historical background; formalities and essentials in securing a copyright; subject matter of copyright; remedies; international aspects of copyright under Berne Union, Universal Copyright Convention, Inter-American Convention; copyright licensing and performing right societies. (Spring—evening.)
- 318 **Creditors' Rights (3)** Kirkpatrick  
Creditors' remedies outside bankruptcy—compositions, agreements, general assignments; bankruptcy proceedings under the federal statute, administration, discharge, the position and powers of the trustee, preferences; corporate reorganization under Chapter X of the Bankruptcy Act. (Fall—day and evening; summer 1965.)
- 321-22 **Current Decisions (2-2)** Clingan  
Required of, and limited to, members of the student staff of the *Law Review*. (RP) (Academic year—day and evening.)
- 330 **Federal Antitrust Laws (3)** Weston, Kirkpatrick  
Sherman and Clayton Acts, related statutes. Price fixing agreements and other types of trade restraints considered under Section 1; monopolizing considered under Section 2 of the Sherman Act. Mergers and tie-in sales; other activities under the Clayton Act. All types of business conduct raising questions under the antitrust laws, including trade association activities, exclusive-dealing arrangements, boycotts, patents and copyrights. (Spring—day and evening; summer 1965.)
- 335 **Jurisprudence (2)** Mayo, Kramer  
Basic jurisprudential concepts; nature of law; development of legal institutions; jurisprudential schools—natural law, analytical, historical, sociological, functional; law and logic; law and justice; the judicial process; legislative, executive, administrative decision making; impact of politics, economics, and scientific advance on legal systems; contemporary trends in jurisprudential thought. (Fall—evening; spring—day.)
- 337 **Taxation—Corporate (2)** Hambrick, Bomar  
Analytical study of income tax problems in corporate dividends and distributions in redemption of stock; corporate liquidations; reorganizations,



mergers, acquisitions; recapitalizations; organization and sales of corporate businesses; collapsible corporations; carry-overs. Prerequisite: Law 279. (Spring—day and evening.)

**338 Taxation—Accounting, Estates and Trusts, and Partnerships (2)**

Weaver

Survey of substantive provisions of federal income tax with respect to tax accounting, estates and trusts, and partnerships. Prerequisite: Law 279. (Spring—day.)

**339 Collective Bargaining and Labor Arbitration (2)**

Merrifield

Collective labor agreement: content, negotiation, administration through grievance procedure and arbitration; problems in settlement of labor disputes. (Fall—day.)

**341 Labor Standards and Social Security Legislation (2)**

Legal problems arising under federal and state statutes dealing with labor standards and social security. Particular emphasis upon regulation of wages and hours, workmen's compensation, insurance against unemployment and old age. (Not offered 1965-66.)

**344 Legal Writing (1)**

The Staff

Preparation of a paper on suitable topic approved by a full-time member of the faculty, who will supervise necessary research and preparation. Approval of the Dean required prior to registration. (Fall and spring—as arranged; summer 1965.)

**345 Legislative Drafting (2)**

Zinn

Advanced instruction and practice in legislative drafting. (RP) (Fall—evening.)

**349 Local Government Law (2)**

Pock

Decision-making processes in metropolitan and local communities; types and objectives of city, county, special function local government units; intergovernmental relations; original organization and changes; personnel; local lawmaking; responsibility in tort; introduction to community planning. (Fall—day and evening.)

**355 Government Contracts I (2)**

Nash, Cibinic, McIntire

Survey of basic law underlying government procurement, basic power and limitations on Federal Government in entering into contracts, administrative and legislative policies governing these contracts, advertised and negotiated procurement procedures, forms of contracts and clauses used. (Fall—day and evening.)

**358 Patent Law (2)**

Kayton

Survey of statutory, administrative, judicial law of patents for students not intending to specialize in patent law. Designed to provide background needed to identify and cope with patent problems that may arise within broader legal problems and to work cooperatively with patent specialist when appropriate. (Spring—day.)

**359 Patent Law (2)**

Kayton

Law of patents subsequent to issuance of patent; nature of patent as property and as a legal instrument; validity—novelty, nonobviousness, commercial success; infringement—direct and contributory, doctrine of equivalents and file-wrapper estoppel. Substantive concepts introduced in an order approximating patentee's and infringer's cases in litigation. Designed for students intending to specialize in patent law; knowledge or experience in patent law helpful but not prerequisite. (Fall—evening.)



- 362 Patent Office Practice (2)** Kayton  
 Substantive and procedural law of patents leading to issuance of patent; mainly related to proceedings before U.S. Patent Office. Obtaining and preserving earliest possible patent filing date: continuing applications, res judicata; novelty and nonobviousness requirements; substantive rules of priority of invention and related affidavit practice; nature of claims and formal defects; restriction and double patenting. Designed for students intending to specialize in patent law. Law 359, previously or concurrently, helpful but not prerequisite. (Fall—evening.)
- 368 Patent Licensing and International and Comparative Patent Law (2)** Kayton, Federico  
 Survey of principal national patent systems with study of their resemblances and differences. Treaties relating to patents. International Convention for the Protection of Industrial Property (patent and trademark treaty between 51 countries); history, analysis, application, administration. Current movements toward harmonization and utilization of patent laws. Patents in the Common Market countries—plans for multinational patents. Fundamentals of Exclusive and Non-Exclusive Patent License Contracts. What can be licensed and how. Problems of royalty calculations; licensing of improvements; grant-back clauses; termination, hold-harmless, most favored nation, patent enforcement and arbitration provisions; comparison of the licensor's and licensee's approach to the drafting and negotiation of a patent license. (Spring—evening.)
- 372 Forensic Medicine (2)** Sharpe, Head  
 Examples drawn from the range of problems arising when the professional interests of lawyers and physicians overlap. Problem contexts include malpractice, personal injury litigation, licensure and discipline, ethics and economics, hospitals and other institutions of practice, and compelled treatment. Open to third-year medical students. (Fall—day and evening.)
- 376 Restitution (2)** Sharpe, Law  
 Quasi-contracts, constructive trusts, rescission, and other legal and equitable remedies for restoring property and money which unjustly enrich others at the expense of volunteers, victims of misappropriation, and parties to mistaken contracts. (Spring—day and evening; summer 1965.)
- 378 Secured Transactions (3)** D. Green, Brown  
 Suretyship and mortgages: security interests in real and personal property, their creation, transfer, enforcement, extinguishment; law of suretyship, especially in context of accommodation credit and commercial and financial practices. (Spring—day and evening.)
- 382 Selected Problems in the Trial of Tort Cases (2)** Goldsborough  
 Open to undergraduates with 56 hours or more, including Law 161-62, 215, 240, and to graduate students and young lawyers without experience in the trial of a negligence case. Recent developments in the principal areas of negligence law; extension of fundamental concepts of damages and principal aspects of settling negligence case; preparation and trial of negligence case; contemporary liability insurance policy and its impact upon tort litigation; literature of tort law. (Fall—evening.)
- 391 United Nations Law and World Order (2)** Mallison  
 Introduction to international law through study of law and practice of United Nations Charter; structure and process of decision of United Nations; maintenance of international peace and security—peaceful settlement of disputes and national and collective self-defense; formulation and implementation of human rights. Complements but does not repeat the material in Law 254. (Spring—day and evening.)

## GRADUATE COURSES

Candidates for the degree of Master of Laws may register for any of the 400 series courses or any of the 300 series courses (except Trial Practice Court), if not previously taken, and for certain 200 series courses upon permission of the Dean. Unclassified students may elect any of the courses or seminars open to Master of Laws or Master of Comparative Law candidates.

- 401 **Seminar: Administrative Law (2)** Davison  
Group study of specific problems in administrative law. (RP) (Spring—day.)
- 408 **Seminar: Constitutional Law (2)** Dixon  
Group study of contemporary problems in constitutional law; process of constitutional litigation; problems of effectuating constitutional guarantees. (RP) (Spring—day.)
- 412 **Use and Control of Atomic Energy and Space Technology (2)** H. Green  
Problems resulting from revolutionary scientific developments of recent years. Impact of advanced technologies on the law and legal institutions established to assure their adequate control in the public interest. Laws relating to atomic energy and space. Provisions of the Atomic Energy Act and the regulations of the Atomic Energy Commission governing civilian uses of atomic energy. Patent, security, and international considerations. (RP) (Spring—evening.)
- 413 **The Modern Corporation (2)** Manne  
Application of principles of political economy to modern, large corporations. Examination and analysis of such phenomena as separation of ownership and control, fights for control, shareholder voting, impact of capital markets and corporate activity, relation of antitrust laws to corporate control, relevance of specific aspects of S.E.C. and general corporation laws to large corporations. (RP) (Fall—day.)
- 415 **Administration of Criminal Justice (2)** Allen  
Selected problems such as arrest, police interrogation, electronic interception, discovery, relative positions of prosecution and defense in preparing cases. Professional responsibility of lawyers emphasized. (Spring—evening.)
- 416 **Post-conviction Dispositions—Dynamics of the Law of Criminal Corrections (2)** Barkin  
Study of the philosophy, statutes, practice, problems, and potentials of the various alternatives facing a charged or convicted defendant including: bail; mental fitness to proceed to trial; probation; sentencing (adults, youthful offenders, juvenile delinquents); parole; facilities and programs of correctional institutions; consideration of rights of prisoners, especially when balanced against administrative necessity. Purpose of the course: to give lawyers a better understanding of this area and to develop and improve the law and techniques of administration by improved coordination of those responsible for dealing with offenders. (Spring—evening.)
- 420 **Seminar: Estate Planning (2)** Weaver, Speiller  
Group study of the effective disposition of wealth, inter vivos and testamentary gifts, conservation for owner's future use, use of insurance, tax and administrative problems, business interests, pension and profit-sharing arrangements. (RP) (Spring—day and evening.)
- 421 **European Common Market (2)**  
Analysis of the treaty establishing the European Economic Community. Study of such aspects of the Community's development and functioning, as substantive features of the customs union and free trade area established;



antitrust and tax provisions; legislative, executive, and judicial powers of the Community; its institutions; approximation of national laws and relationship between national and Community laws; development of common economic policies; rights of establishment and doing business within the Community; the Community's relations with Members, non-Members, associated countries, and international organizations. (RP) (Fall—evening.)

- 425 **The Executive Function (2)** Mayo, Miller  
Executive branch in constitutional theory; major trends in development of Executive-Administrative function; organization of Executive branch; relationship of Executive to Congress and Judiciary; policy making procedures within Executive branch including role of Bureau of the Budget in national policy planning; President as opinion leader; case studies in exercise of Executive power in such functional areas as national defense, race-relations, national economy, foreign economic relations; role of law and lawyers in Executive decisional and implemental process. (RP) (Fall—evening.)
- 427 **Convergence: Law and Economics in Theory and Practice (2)**  
Interrelation of law and economics in such subject matter categories and decisional contexts as antitrust laws, economic regulation of industry, fiscal policy planning, government research and development practices, land use planning, and foreign trade and investment. (As arranged.)
- 428 **Food and Drug Law (2)** Goodrich, Kaplan, Kleinfeld  
The Federal Food, Drug, and Cosmetic Act and governmental controls thereunder. Both government and industry viewpoints are considered. (Spring—evening.)
- 432 **Government Contracts II (2)** Nash, Cibinic  
Special problems which arise under government contracts, contract modifications and equitable adjustments during performance of contracts, subcontracting and privity of contract problems, patents and technical data clauses and procedures. (Spring—evening.)
- 433 **Government Contract Claims Procedures (2)** Nash  
Analysis of jurisdiction and procedures of agencies, boards, and courts which grant relief under government contracts—including the General Accounting Office, Boards of Contract Appeals, Contract Adjustment Boards, Court of Claims, and other courts; intent and scope of disputes procedure; authority of contracting officer to settle claims against the Government; time and cost required to obtain relief. (Fall—evening.)
- 434 **Government Contract Cost, Profiting, and Pricing (2)** Nash, Cibinic  
Examination of rules of cost allowance and disallowance in government contracts; particular emphasis on concepts of reasonableness and allocability; problems in application of cost rules to fixed price situations; consideration of historically difficult cost questions such as advertising, bidding expense, research and development costs; discussion of cost problems relating to capital investment policies including rent, depreciation, interest; comparison of contract cost principles to Federal Income Tax and Renegotiation cost rules. (Summer 1965.)
- 435 **Seminar: Selected Problems in Government Contracts (2)** McIntire  
Research and discussion of selected problem areas. (RP) (Spring—evening.)
- 437 **Diplomatic and Consular Law and Practice (1)** Mitchell  
History and development of diplomatic relations between nations; codification of laws of diplomacy; rights and duties of diplomatic agents; extent of diplomatic immunity from judicial process (civil and criminal) of members of diplomatic missions; exemption from taxation of diplomatic agents and



property used for diplomatic purposes; inviolability of diplomatic premises, communications, archives. History and development of consulates; contrast between extent of rights, privileges, exemptions, immunities of diplomatic and consular personnel; codification of consular law and practice; nature of consular immunity, civil and criminal; duties and functions of members of consular post; inviolability of consular premises, communications, archives; present status and extent of consular treaties and agreements. (Not offered 1965-66.)

- 438 **Seminar: International Commercial Transactions (2)** Ledakis  
Role of lawyer and regulation of his practice, survey of problems of foreign client doing business with United States or its nationals, developments in foreign trade and investment among industrialized countries, special treatment of role of private enterprise and government agency operations in developing nations. (RP) (Not offered 1965-66.)
- 440 **Legal Aspects of International Business Transactions (2)** Nurick, Goekjian  
United States law and practice, including current antitrust and tax problems; brief comparison with British and Civil Law systems; international law, foreign contracts, choice of law; currency considerations; effect of S.E.C. laws and regulations; international trade, including GATT and reciprocal trade arrangements; sources of finance, both United States and foreign, private and public, including international organizations; and selected case studies. In addition to the regular lecturers, there will be guest lecturers in their specialties. Prerequisite: Law 254. (RP) (Spring—evening.)
- 441 **Seminar: International Technical and Economic Assistance (2)** Glick  
Programs of technical assistance for economic development overseas conducted by United States, United Nations, Organization of American States. Special attention to work being done in Latin America. Problems of law, policy, program, and administration. Evaluation of alternate operating techniques and results achieved by these programs in their first 15 years. Open also to qualified graduate students in the fields of economics, international affairs, and political science. (RP) (Fall—evening.)
- 442 **Seminar: Labor Law (2)** Merrifield  
Group study of contemporary problems in labor law. (RP) (Fall—day.)
- 443 **Labor Relations in the Federal Service (2)** Holland, Wallerstein  
Joint seminar—law and economics—on labor relations in the federal service. Particular attention to current problems arising from the President's Task Force Report and the Executive Order of January 17, 1962, creating a new system of collective relationships between employee organizations and the Federal Government. (RP) (Not offered 1965-66.)
- 444 **Seminar: Contemporary Problems in Jurisprudence (2)** Mayo  
Impact of significant political and technological factors, trends, and movements, particularly on legal system and response to such developments as reflected in the jurisprudential thought of various contemporary legal scholars. Attention given to the following topics: concepts of stability and change; inadequacy of traditional jurisprudential systems for rationalizing modern legal-policy processes; movement from a jurisprudence of rules to one of consequences and to a projective as contrasted with a retrospective orientation; comparative study of decisional concepts and techniques employed by the various professions and disciplines engaged in governmental decision making and policy planning; the components of a satisfactory jurisprudence for the emerging administrative-executive state. Term paper of publishable quality required. Registration limited; admission by permission of the instructor. (RP) (Summer 1965.)
- 445 **Bargaining and Negotiation: Concepts and Techniques (2)** Ramundo  
Function of the lawyer and policy maker (client) in private, intragovern-

mental, and international negotiations; place of negotiations in private practice and governmental operations; achieving consensus among contentious parties; negotiating techniques, including effective use of the "fallback;" gaming exercises in the actual conducting of negotiations with practical work in the preparation of claim letters, agency and national positions, and implementing negotiating instructions. (Fall—evening.)

- 449 **Law of the Near East (2)** Liebesny  
 Law of the Arab countries, including basic principles of Islamic law, analysis of the present day codes, and investigation of the Western influences on laws of Arab countries. (Fall—evening.)
- 452 **Law and Psychiatry (2)** Allen, Ferster  
 Psychiatric information and insights useful for lawyers, including concepts of modern psychiatry concerning personality, nosology and etiology of mental disorders and their significance for purposes of criminal law, civil competency, hospitalization, and other legal proceedings, veracity of witnesses, presentation of expert psychiatric testimony. (RP) (Fall—evening.)
- 454 **Legal Aspects of American Foreign Relations (2)** Miller  
 Legal and policy questions involved in the conduct of American foreign relations. Emphasis upon participation in such multinational organizations as the International Labor Organization, the Organization of American States, the Organization for Economic Cooperation and Development, and the North Atlantic Treaty Organization. Some attention to export controls, international measures for arms control, the American constitutional structure for the conduct of foreign affairs, and the role of law in foreign relations. Prerequisite: Law 110. (RP) (Fall—day.)
- 455 **Legal Regulation of International Coercion (2)** Mallison  
 Process of legal decision in war and when expectations of violence are high—contemporary international law of war and coercive measures short of war such as limited naval blockade; legal aspects of modern methods of coercion—economic, political, psychological, and military; limited war and modes of preventing "escalation" to total war; regulation of hostilities; problems concerning atomic, bacteriological, and chemical weapons. (RP) (Spring—evening.)
- 463 **Problems in Communications Law (2)** Mayo  
 Institutional structure of mass media; continuing adjustment between public interest goals and the competitive economic system; mass communications process and governmental function including lobbying activities; conflict between freedom of speech and of the press and other major community interests such as the right to a fair trial, protection of community moral standards, and national security; public information process; types of control exercised over newspapers, motion pictures, television, and mails by government and by private groups; comprehensive analysis of television industry and its programming operations; concept of public interest in broadcasting; international communications including the function of ITU and the prospective development of communications satellite systems. (Spring—evening.)
- 466 **Regulation of Securities and Securities Markets (2)** Manne, H. Green  
 State and federal laws governing offering and distribution of securities to the public by corporate issuers and others, regulation of securities markets, rights and liabilities of purchasers under such statutes. Emphasis on statutes administered by Securities and Exchange Commission. (Fall—day and evening.)
- 468 **Advanced Topics in Patent Law (2)** L. Harris  
 Licensing and protection of industrial property; uses and abuses of patents; governmental regulation; protection abroad; role of patents in business;



economic and social functions of patents, trademarks, and copyrights. Prerequisite: Law 358 or 359. (RP) (Spring—evening.)

**469 Research in Patent, Trademark, and Copyright Law (2)** L. Harris

Prerequisite: Law 468, 492, and related courses; and a *B* average. Request in writing, with proposed outline of topic of research, must be submitted to the Dean at least one month prior to registration day. Registration permitted for one semester only; work must be completed within the semester and paper submitted not later than last day of classes. (RP) (Fall and spring—as arranged.)

**471 Research in Public Law (2)**

The Staff

Registration limited to students with at least a *B* average who have had a seminar or comparable course in field of proposed research. Request in writing, with proposed outline of topic of research, must be submitted to the Dean at least one month prior to registration day. Registration permitted for one semester only; work must be completed within the semester and paper submitted not later than last day of classes. (RP) (Fall and spring—as arranged.)

**473 Soviet Law (2)**

Ramundo

Concept of "socialist legality"; impact of Soviet legal system upon the individual in his relationship with the state and other participants in Soviet society; role of Communist Party in the institutional framework of the Soviet legal system; Soviet philosophy of law; state (constitutional) law including Soviet federalism, governmental apparatus, and rights and obligations of citizenship; criminal law, including economic crimes, role of social and public organizations in administration of justice, and concept of "administrative" punishment; property law including land tenure and personal property rights; labor law including the special role of trade unions and labor contracts; civil law including state enterprises as legal entities and the law of torts and contracts; family law; procedural law, civil, criminal, and government arbitration; and international law. (RP) (Spring—evening.)

**474 Chinese Law (2)**

Lee

A short survey of the history of Chinese law and its social background; changes of Chinese law between the turn of the century and the end of the Manchu dynasty; legal concepts of the Chinese Republic from 1912 until the communist take-over in 1949. The philosophy and development of the communist legal systems. (Fall—evening.)

**480 Taxation—Oil and Gas (2)**

Hambrick

Application of federal income tax to producing segment of oil and gas industry; common types of interests in producing properties; tax treatment of exploration expenditures; intensive study of problems in the deduction of intangible development and drilling costs; concept of "economic interest"—who is entitled to depletion?; tax distinctions between leasing transactions, sharing transactions, and sales of oil and gas properties and prospects; "ABC" transactions; organizational problems in oil and gas ventures—joint operating agreements, general and limited partnerships, associations taxable as corporations and pooling arrangements; "carried interests" and other financial arrangements in development of oil and gas properties. Prerequisite: Law 279. (Not offered 1965–66.)

**485 Seminar: Advanced Topics in Taxation (2)**

Barlow, Dunnan

Important areas of the tax law will be considered in depth, with a study of proposed changes and policy considerations as well as existing law. Prerequisite: Law 279. (RP) (Fall—evening.)

**490 Income Taxation of Foreign Business and Investment (2)** Hambrick

The provisions and policies of the Federal Income Tax law applicable to



foreign income, including considerations affecting the choice of methods of engaging in foreign business and investment, treatment of controlled foreign corporations, allocation of income in foreign commerce, credit for foreign taxes, principles and trends of U. S. tax treaties. (Spring—evening.)

**491 The Civil Aeronautics Board and the Administrative Process (2)** Park

Study of the Civil Aeronautics Board—its structure, limitations, potentials, and achievements; analysis of the dual responsibility for regulation and promotion; relation to market structure, conduct, and prospects of the domestic air transport industry. (RP) (Spring—day.)

**492 Seminar: Trade Regulation (2)** Weston

Group study of current problems relating to unfair trade practices and federal antitrust laws. (RP) (Spring—evening.)

**493-94 Seminar: Regulation of Transportation (2-2)** Hill

Various problems in connection with the regulation of surface, water, and air transportation carriers will be considered. Matters to be treated include the historical development of the transportation industries and relevant federal legislation, the scope of federal regulation, the regulation of the supply of transportation services, the public service obligations of operating carriers, the regulation of transportation rates including consideration of the rate-making process and the regulation of rate competition between different transportation industries, and mergers in the transportation industry. (Academic year—evening.)

**495 Land Use Planning (2)** Nutting

Selected problems in urban redevelopment and housing, with particular emphasis on programs under current federal and state legislation. (RP) (Fall—evening.)

**496 Antitrust Problems in Regulated Industries (2)** Cox

Consideration of the problems of competition in regulated industries, the responsibility of regulatory agencies in this field, and the application and impact of the antitrust laws to this area. Some emphasis on problems of proving complex economic and technological facts. (RP) (Fall—evening.)

**497 Public Law of Metropolitan Affairs (2)**

This seminar will consider a range of legal and policy problems arising with the rapid growth of urban society: intergovernmental relations including divisions among federal, state, and local units with respect to fiscal authority, law enforcement jurisdiction, etc.; federal grants to states and localities for such purposes as highway construction, hospitals, education, slum clearance, and control of juvenile delinquency; interstate compacts and authorities as a governmental device for the control of such functions as transportation, air and water pollution, conservation of natural resources, and recreational facilities. (As arranged.)

## ALUMNI AND ALLIED ASSOCIATIONS

### The General Alumni Association

THE OBJECTIVES OF THIS ASSOCIATION are to unite the graduates who wish to associate themselves for charitable, educational, literary, and scientific purposes, and to promote the general welfare of the University.

Eligible members are those who have matriculated in any school of the University and who have left the University in good standing, or any person who is or has been a member of the teaching, research, or administrative staff of the University, or of the Board of Trustees of the University. Active members are those eligible members who are current contributors to or life members of The George Washington University General Alumni Association, the Alumni Association of any school of the University, or contributors to the Annual Support Program.

The Alumni Office is in Bacon Hall, 2000 H Street NW., Washington, D. C. 20006.

All alumni are urged to keep the Alumni Office informed of changes of address or occupation and to supply information with regard to their fellow alumni.

### THE GEORGE WASHINGTON LAW ASSOCIATION

The George Washington Law Association, the organization of graduates of the Law School, was founded in 1912 and has been affiliated with the General Alumni Association since 1926. Its purposes as stated in the constitution are to promote high standards of legal education, to keep the alumni of the Law School in closer touch with one another and especially with members of their own classes, to gather and publish at intervals information as to the whereabouts and activities of these alumni, and to further the interests of the Law School.

### OFFICERS OF THE ASSOCIATION FOR THE YEAR 1963-64

*President.*—Joel Barlow, LL.B. 1935; Union Trust Building, Washington, D. C.

*First Vice President.*—Samuel J. L'Hommedieu, Jr., LL.B. 1951, LL.M. 1952; 808 17th Street NW., Washington, D. C.

*Second Vice President.*—Glen A. Wilkinson, J.D. 1938; 1616 H Street NW., Washington, D. C.

*Third Vice President.*—W. Theodore Pierson, LL.B. 1938; Ring Building, Washington, D. C.

*Secretary.*—Clarence T. Kipps, Jr., J.D. 1953; 1001 Connecticut Avenue NW., Washington, D. C.

*Treasurer.*—Alexander L. Stevas, A.B. 1949, LL.B. 1951; 5603 Maryland Avenue, Falls Church, Va.

*Executive Committee:*

Charles Oscar Berry, LL.B. 1932, A.B. 1933; 1100 H Street NW., Washington, D. C.

Fontaine C. Bradley, LL.B. 1925; Union Trust Building, Washington, D. C.

Sam S. Crutchfield, Jr., A.B. 1960, LL.B. 1963; Municipal Court of Appeals, Washington, D. C.

Gordon W. Daisley, LL.B. 1933; 700 10th Street NW., Washington, D. C.

Lloyd Fletcher, Jr., J.D. 1939; 4815 Maury Lane, Alexandria, Va.

Elizabeth S. Freret, LL.B. 1950; 1108 16th Street NW., Washington, D. C.

Philip A. Gragan, A.B. 1953, J.D. 1959; Woodward and Lothrop, Washington, D. C.

Joseph D. Hughes, LL.B. 1934; 525 William Penn Place, Pittsburgh, Pa.

Thomas S. Jackson, A.B. 1933, LL.B. 1935; 1025 Connecticut Avenue NW., Washington, D. C.

Ronald E. Madsen, J.D. 1955; Southern Building, Washington, D. C.

George E. Monk, A.B. 1928, LL.B. 1930, LL.M. 1934; Colorado Building, Washington, D. C.

Bernard I. Nordlinger, A.B. 1929, LL.B. 1933; Southern Building, Washington, D. C.

Kenneth W. Parkinson, A.B. 1950, LL.B. 1952; Tower Building, Washington, D. C.

Walter F. Sheble, LL.B. 1952, LL.M. 1953; 1025 Connecticut Avenue NW., Washington, D. C.

John R. Stafford, LL.B. 1962; 847 S. Greenbrier, Arlington, Va.

Philbrick McCoy, ex officio, LL.B. 1922, LL.M. 1923; The Superior Court, Los Angeles, Calif.





## THE UNIVERSITY

### HISTORY AND ORGANIZATION

THE GEORGE WASHINGTON UNIVERSITY had its beginning in 1821 as The Columbian College in the District of Columbia. The name of the institution was changed in 1873 to Columbian University and in 1904 to The George Washington University. The debt of the University to George Washington whose name it bears is an intangible one.

George Washington, as President and as private citizen, had urgently insisted upon the establishment of a National University in the Federal City. There he hoped that, while being instructed in the arts and sciences, students from all parts of the country would acquire the habits of good citizenship, throwing off local prejudices and gaining at first hand a knowledge of the practice, as well as the theory, of republican government. To further the materialization of his hopes, Washington left a bequest of fifty shares of The Potomac Company "towards the endowment of a University to be established within the limits of the District of Columbia, under the auspices of the General Government, if that government should incline to extend a fostering hand towards it." The Congress never extended "a fostering hand." The Potomac Company passed out of existence, and Washington's bequest became worthless.

Fully conscious of Washington's hopes, but motivated primarily by a great missionary urge and the need for a learned clergy, a group of dedicated ministers and laymen sponsored a movement for the establishment of a college in the District of Columbia. Inspired largely by the zeal and energy of the Reverend Luther Rice, they raised funds for the purchase of a site and petitioned Congress for a charter. After much delay and amendment, Congress granted a charter which was approved by President Monroe on February 9, 1821. To safeguard the College's nonsectarian character it provided "That persons of every religious



denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College, or denied any of the privileges, immunities, or advantages therefore, for or on account of his sentiments in matters of religion."

During the entire time when the institution was known as Columbian College, its activities were centered on College Hill, a tract of forty-six and a half acres between the present Fourteenth and Fifteenth Streets extending north from Florida Avenue to somewhat beyond Columbia Road. The Medical School was located downtown. For the better part of the Columbian University period, the buildings of the University were situated along H Street between Thirteenth and Fifteenth Streets. The Medical School group still remains there.

During the last half century the University's present plant has been developed in that section of the old First Ward familiarly known as "Foggy Bottom," between Nineteenth and Twenty-fourth Streets, south of Pennsylvania Avenue. The area is not without its reminders of historic interest to the University. President Monroe who signed the Charter lived at 2017 Eye Street. The first President of the Board of Trustees, the Reverend Obadiah B. Brown, was for fifty years the pastor of a church at Nineteenth and Eye Streets, and Washington selected Twenty-third and E Streets as the site of the National University he had hoped to see established.

The University as it is now organized consists of Columbian College of Arts and Sciences, which offers work leading to Associate's, Bachelor's, and Master's degrees; the Graduate Council, which offers work leading to the degree of Doctor of Philosophy; the professional schools, which include Medicine; Law; Engineering and Applied Science; Education; and Government, Business, and International Affairs; the College of General Studies; the Division of University Students; the Division of Aerospace Studies; and the Summer Sessions.

The George Washington University is privately endowed and is governed by a self-perpetuating Board of Trustees of which the president is an *ex officio* member.

### ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another. The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

### LOCATION

The George Washington University is in downtown Washington, four blocks west of the White House. Within a few blocks are the buildings housing the offices of many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor. Also readily accessible are the Capitol, the Library of Congress, the National Archives, the Supreme Court, and other federal courts.



## THE BOARD OF TRUSTEES 1964-65

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Lewis L. Strauss, Sc.D., LL.D., L.H.D.

L. Corrin Strong, Ph.B., LL.D.

\*James Cornelius Van Story, Jr., A.M.

\*Frank Harvey Weitzel, A.B., LL.B.

James Russell Wiggins, LL.D.

\*John Johnston Wilson, LL.B.

Watson W. Wise, Ph.B.

\*James Otis Wright, B.S., LL.B.

## HONORARY TRUSTEES

Mrs. Joshua Evans, Jr., A.B., Ed.D.

Charles Carroll Glover, Jr., A.M., LL.B., LL.D.

Ulysses S. Grant, 3d, B.S., Graduate United States Engineers School,  
LL.D., Sc.D.

Gilbert Grosvenor, A.M., LL.D., Litt.D., Sc.D.

Alexander Wetmore, Ph.D., Sc.D.

Charles Stanley White, M.D., Sc.D.

Lloyd Bennett Wilson

\* Nominated by the alumni.

## OFFICERS OF ADMINISTRATION 1964-65

### THE UNIVERSITY

Oswald Symister Colclough, B.S., LL.B., LL.D., Sc.D., *Acting President*  
John Anthony Brown, Jr., A.M., L.H.D., LL.D., *Vice President and  
Dean of Faculties*  
Henry William Herzog, B.S., *Vice President and Treasurer*

### OFFICE OF THE PRESIDENT

William Parkhurst Smith, Jr., A.B., M.B.A., *Executive Assistant to the  
President*

### OFFICE OF THE VICE PRESIDENT AND DEAN OF FACULTIES

Harold Frederick Bright, Ph.D., *Associate Dean of Faculties*  
Claud Max Farrington, A.M., *Director of Special Projects*  
Sally Oleon Shames, Ph.D., *Assistant to the Vice President and  
Dean of Faculties*  
Tamis Wilson Borden, A.B., *Administrative Secretary*

### OFFICE OF THE VICE PRESIDENT AND TREASURER

William David Johnson, B.S., *Comptroller*  
Humbert John Cantini, Jr., LL.B., *Assistant Treasurer*  
Margaret Payne Greene, B.S., *Assistant Treasurer, Contract Research*  
Maurice Kingsley Heartfield, Jr., A.B., *Assistant Treasurer; Director  
of Student Financial Aid*  
John Collum Einbinder, A.B. in Govt., *Business Manager*

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Blaine Richard Berg, M.S., *Director of Public Relations*  
Paul Vernon Bissell, Ph.D., *Dean of Men; Director of Veterans  
Education*

Richard Bernard Castell, A.B., M.D., *Director of Health Services*  
Charles William Cole, Ph.D., *Dean of the Summer Sessions*  
Robert Faris, B.S., *Director of Men's Athletics*  
Warren Gould, A.M., *Assistant Vice President—Resources*  
Frederick Russell Houser, A.M. in Govt., *Registrar*  
Elmer Louis Kayser, Ph.D., LL.D., *University Historian*  
Virginia Randolph Kirkbride, A.M., Ed.D., *Dean of Women*  
John Francis Latimer, Ph.D., Litt.D., *Director of Foreign Student  
Affairs; University Marshal*  
John Russell Mason, A.M., M.S. in L.S., *Librarian; Curator of Art*  
Joseph Young Ruth, A.B., *Director of Admissions*  
Joseph Richard Sizoo, A.M., D.D., Litt.D., LL.D., L.H.D., S.T.D.,  
*Director of University Chapel*  
Loretta May Stallings, A.M., *Director of Women's Athletics*  
Stanley Tracy, LL.B., *Director of Alumni Relations*  
Benjamin Douglass Van Evera, Ph.D., Sc.D., *Dean for Sponsored  
Research*  
Wallace Edward Weems, Jr., A.B., *Director of Personnel Services*

# THE LAW SCHOOL AND GRADUATE SCHOOL OF PUBLIC LAW RECORD FOR 1964-1965

## Degrees Conferred

### BACHELOR OF LAWS

JUNE 7, 1964

Nicholas Aloysius Addams B.S. in E.E. 1960, Newark College of Engineering	N.J.	Stephen Ira Danzansky A.B. 1961, Washington and Lee University	D.C.
William Money Aston A.B. 1953, St. John's College	D.C.	Marvin Speed Davis B.S. 1961, Temple University	Pa.
Joseph Francis Baca A.B. in Ed. 1960, University of New Mexico	N.M.	Daniel Gerald Donovan A.B. 1951, Brown University	Va.
Robert John Baynham B.S. in M.E. 1959, University of Pittsburgh	Va.	Dale Dorius B.S. 1961, Brigham Young University	Utah
Donald Francis Beach B.B.A. 1961, The George Washington University	Md.	Donald William Dorr A.B. 1961, Nebraska Wesleyan University	Nebr.
Wiley Elmer Bean A.B. 1960, Michigan State University of Agriculture and Applied Science	Va.	Clifford Alonzo Dougherty B.S. in Agr. 1937, Montana State College	Va.
Michael Porter Bentzen A.B. 1960, DePauw University	Md.	Daniel David Draper, Jr. B.S. 1962, Oklahoma State University of Agriculture and Applied Science	Okla.
Henry Adler Berliner, Jr. A.B. 1956, University of Michigan	D.C.	John Robert Duncan, Jr. B.S. in Ch.E. 1956, South Dakota School of Mines and Technology	Va.
George Edward Bitner A.B. 1961, Ohio Wesleyan University	Va.	Lewis Hamilton Eatherton III B.S. in Petr. Eng. 1958, University of Tulsa	Va.
Harold Frederick Boardman, Jr. B.S. 1961, Trinity College	Pa.	Alan Whitney Eden A.B. 1954, Ohio Wesleyan University	D.C.
Henry Healy Booth A.B. 1957, University of North Dakota	D.C.	Paul Christopher Farmer B.S. in Mining Eng. 1956, West Virginia University	W.Va.
Porter Keith Brown A.B. 1961, University of Kansas	Kans.	Bruce Fredric Fein B.B.A. 1960, M.B.A. 1961, University of Miami	Md.
Ralph Manfred Buft A.B. 1958, Ohio University	Md.	David Edwin Feldman A.B. in Govt. 1961, The George Washington University	Va.
Charles Frederick Butler A.B. 1959, Boston University	Mass.	Lynn Grant Foster B.S.E. 1959, University of Michigan	Idaho
Alvan Capp A.B. 1961, The George Washington University	Fla.	Michael Graham Gallagher A.B. in Govt. 1960, The George Washington University	Va.
Edward Henry Casey B.S. 1947, Oklahoma State University of Agriculture and Applied Science	Okla.	John Warren Girvin, Jr. B.E.E. 1960, University of Virginia	Va.
David Daniel Centola B.S. 1949, Fordham University	Md.	Robert Louis Goldberg B.S. in Ch.E. 1959, Northeastern University	Md.
Paul John Cook B.Mgt.E. 1960, Rensselaer Polytechnic Institute	Va.	Nicholas Goldsborough A.B. 1959, University of Virginia	Md.
Phillip Alfred Cooke A.B. 1961, University of Washington	Md.	Charles Goldstein A.B. 1961, Western Reserve University	Va.
Page deRonde Cranford B.S. 1958, Washington and Lee University	Md.	Rafael Guzman A.B. 1961, University of Dayton	Md.



Lester Lee Hallacher	Va.	John Sidney Nuzum	Va.
B.S. 1959, Pennsylvania State University		B.S. 1951, U.S. Coast Guard Academy	
John Colvin Hamilton	Va.	M.S. 1960, Rensselaer Polytechnic Institute	
A.B. 1954, Duke University			
Benton Arlington Hause	Va.	Frank Albert Parks	N.Y.
A.B. 1949, The George Washington University		B.B.A. 1958, Clarkson College of Technology	
M.B.A. 1955, University of Michigan			
William Edmond Heaton	Va.	Robert Sidney Perkins	Va.
B.S. in M.E. 1943, Purdue University		A.B. 1960, University of Florida	
Paul Harold Heller	Va.	Gordon Lloyd Peterson	Md.
B.S. in Ch.E. 1960, Massachusetts Institute of Technology		B.S. 1959, University of Wisconsin	
Martin Arnold Hertz	Md.	Kevin Raymond Peterson	Va.
A.B. in Govt. 1962, The George Washington University		B.S. 1953, Canisius College	
Stephen Prescott Hill	Va.	William Theodore Pierson, Jr.	D.C.
A.B. 1957, Williams College		A.B. 1961, Cornell University	
Robert Rowan Hubbard	Va.	Louis Thomas Pirkey	Texas
B.E.E. 1960, Ohio State University		B.S. in Ch.E. 1960, University of Texas	
Nathaniel Archibald Humphries	D.C.	James Keith Pont	Va.
B.S. in M.E. 1956, University of South Carolina		A.B. 1960, Nebraska Wesleyan University	
B.S. in Met. 1958, University of Utah		Stanley Randall Pratt III	Mich.
David Meredith Jenkins II	Va.	A.B. 1961, Hillsdale College	
A.B. 1958, DePauw University		Charles James Robertson III	Va.
Stephen Elias Karsch	N.Y.	A.B. 1956, University of Virginia	
B.S. in B.A. 1961, American University		A.M. 1958, Harvard University	
Robert Jack Katz	Va.	Harvey Jay Rothberg	N.Y.
A.B. 1961, Brooklyn College		B.S. in B.A. 1961, University of Buffalo	
John Francis Kelly	Va.	Robert Edward Ruddy	S.D.
A.B. 1958, Mankato State College		A.B. 1961, State University of South Dakota	
Matthew Keshishian	N.J.	Ernest Lewis Ruffner	Va.
A.B. 1961, University of Kentucky		B.S. 1956, U.S. Military Academy	
James Ralph King	Ky.	Frank Allyn Seemar	Md.
B.S. 1960, University of Kentucky		B.S. in E.E. 1957, University of Connecticut	
Melvin Arthur Klein	Va.	John Siemens, Jr.	D.C.
B.S. 1956, U.S. Naval Academy		A.B. 1956, St. John's College	
Jack Kratchman	Md.	Richard Harold Smith	Va.
B.S. 1948, City University of New York		B.S. in I.E. 1959, Lehigh University	
M.S. 1953, New York University	Conn.	William George Spruill	Va.
Linda Kathleen Lee		B.B.A. 1961, College of William and Mary	
A.B. 1961, Smith College	Md.	John Bailey Stohltz	Calif.
Saul Leitner		B.S. 1960, Brigham Young University	
B.M.E. 1959, Polytechnic Institute of Brooklyn	D.C.	John Myers Stokes	D.C.
David Greene Lilly		A.B. 1961, Texas Technological College	
A.B. 1960, University of California at Los Angeles	Colo.	John Michael Talbot	Md.
Carlos Frederick Lucero		B.S. 1959, University of Maryland	
A.B. 1961, Adams State College	Va.	Donald Edward Townsend	Va.
Roderick William MacDonald		B.S. in Ch.E. 1959, University of Missouri	
Metallurgical Engr. 1959, Colorado School of Mines	Md.	Ta-Hsung Tung	Va.
George Joseph Marlo		B.S. 1960, University of Maryland	
B.S. 1956, Pennsylvania State University	Va.	Thomas Harry Webb	Md.
John Critchley Martin, Jr.		B.S. in C.E. 1944, Ohio Northern University	
A.B. 1960, University of Delaware	Md.	David Zach Webster	Va.
Charles Andrew Mays		A.B. 1957, Bowdoin College	
A.B. 1961, The George Washington University	N.C.	Irwin Isaac Weitz	Va.
Daniel Edward McConnell		A.B. 1958, American International College	
B.S. in M.E. 1960, Duke University	Colo.	Betty Jane Willis	Ga.
Warren Lee McElvain		B.S. in Nursing 1950, University of Pittsburgh	
A.B. 1961, University of Colorado	Va.	M.B.A. 1957, University of Pennsylvania	
William John McKennan	N.Y.	Floyd Willis III	Md.
A.B. 1939, Colgate University		A.B. 1961, University of Maryland	
Jack Rubin Mennis	Va.	Frederick Gerald Yeager	Iowa
B.B.A. 1960, City University of New York		B.S. in B.A. 1960, State University of South Dakota	
Murrell Pinckney Morris	Mo.	Philip Edward Zanfagna, Jr.	Mass.
B.S. 1934, Louisiana College		A.B. 1958, Ohio Wesleyan University	
M.S. 1936, Ph.D. 1949, Louisiana State University		B.D. 1961, Yale University	
Albert Louis Nelson III		David Werner Zugschwerdt	Tenn.
B.S. in M.E. 1960, M.B.A. 1962, Washington University		A.B. 1961, Northwestern University	

# FEBRUARY 22, 1965

Anna Pierrepont Angier A.B. 1944, Maryville College of the Sacred Heart	Tenn.	*Herbert Lee Gatewood B.S. in Ch.E. 1953, Rose Polytechnic Institute	Va.
James Monteith Austin A.B. in Govt. 1957, The George Washington University	Va.	Wallace Gary Goodson B.S. 1961, Brigham Young University	Va.
*Melvin Barron A.B. 1961, Boston University	Mass.	Richard David Grauer B.S.E. 1958, University of Michigan	Va.
Mary Elinor Thompson Beach B.S. 1957, Ohio State University	Va.	M.Auto Eng. 1960, Chrysler Institute of Engineering	
M.B.A. 1961, The George Washington University		Gordon Holte Hagen A.B. 1957, St. Olaf College	D.C.
*Thomas Emmert Beall, Jr. B.S. 1960, University of Maryland	D.C.	William Spencer Holcomb A.B. 1957, Illinois Wesleyan University	Md.
*Richard Michael Beck B.M.E. 1960, Rensselaer Polytechnic Institute	Va.	Ralph Logan Houser B.S. in Com. 1935, University of Iowa	Va.
Townsend Mikell Belser, Jr. B.Ch.E. 1958, Georgia Institute of Technology	S.C.	Joseph Samuel Iandiorio B.E.E. 1959, Villanova University	D.C.
*Ingram Thomas Benson A.B. 1936, Carleton College	Va.	*Patrick Henry James B.B.A. 1962, University of Oklahoma	Okla.
*Gerald Henry Bjorge B.S. in Ch.E. 1959, Northwestern University	Va.	*William Mark Jones A.B. 1961, Texas Christian University	Texas
M.S. in Eng. 1962, Princeton University		*Stan Carl Kaiman B.S. in M.E. 1961, University of Nebraska	Md.
*Sara Elizabeth Bjorge B.S. in H.E. and R.Sc. 1959, Iowa State University of Science and Technology	Va.	*Sylvan Lewis Katz B.S. 1943, University of Maryland	D.C.
Ray Samuel Bolze A.B. 1957, Pennsylvania State University	Md.	*George LeRoy Kensinger, Jr. B.E. 1959, Yale University	Pa.
David Crawford Carvey A.B. 1955, Pennsylvania State University	Md.	*Thomas Glenn Keough B.S. 1961, South Dakota State College of Agriculture and Mechanic Arts	Va.
*James Edward Casey B.S. in Com. 1957, Roosevelt University	Va.	*Don Morris Kerr A.B., B.S. in Ch.E. 1960, Texas Technological College	Va.
M.B.A. 1957, University of Chicago		Vibert Larraine Kesler, Jr. B.S. 1960, University of Utah	Utah
*James Mathew Catchick A.B. 1961, University of Michigan	Mich.	Robert William Kinzie B.S. 1958, A.M. 1961, University of Maryland	Md.
*Lynn Bergman Clausen A.B. 1956, Michigan State University of Agriculture and Applied Science	Va.	Roy Masamichi Kodani A.B. 1961, Lafayette College	Hawaii
*Michael Clark Conlon A.B. 1954, Lafayette College	Va.	Peter Hajime Kondo B.S. 1957, Michigan State University of Agriculture and Applied Science	Va.
Lawrence Franklin Costill, Jr. B.S. in B.A. 1952, Drexel Institute of Technology	N.J.	John Michael Kucharski B.E.E. 1958, Marquette University	Md.
Dorris Caldwell Daniel, Jr. A.B. 1957, American University	Tenn.	*Elliot Andor Lackenbach B.S.E. (M.E.) 1962, University of Michigan	Va.
*John Glandon Davies A.B. 1960, Yale University	D.C.	*Robert Goodman Lake B.S. 1945, U.S. Military Academy	Mich.
Barriater at Law 1963, Lincoln's Inn, England		M.B.A. 1950, University of Chicago	
Raymond Aloysius Driscoll A.B. 1939, St. John's University, New York	Md.	Jeanette Mikkelsen Lamar A.B. 1962, Chatham College	Va.
*Melvin Jerome Ehrenfreund A.B. 1960, University of Connecticut	N.Y.	*Raymond Augustus Lamb B.S. in B.A. 1962, University of North Dakota	N.D.
Larry William Evans B.S. in Ch.E. 1961, Purdue University	Va.	Arthur Leonard Liberman A.B. 1955, B.S. in Ch.E. 1956, M.S. in Ch.E. 1957, Columbia University	Va.
Francis Rayome Filiatreau, Jr. B.C.E. 1957, Clarkson College of Technology	N.Y.	Randall Gale Litton B.S. in E.E. 1961, University of Idaho	Idaho
Eugene Jay Finkel A.B. 1952, Swarthmore College	D.C.	*James Mitchell Llewellyn, Jr. B.S. in Aero. Eng. 1956, St. Louis University	Va.
A.M. 1961, The George Washington University		*Frank Anthony Lukasik B.S. 1958, Rhode Island School of Design	Va.
Paul Waring Fish B.E.E. 1959, M.E.E. 1961, Catholic University of America	Md.	Norman Burleigh Lynch (With distinction)	N.J.
Gladys Leech Fishel A.B. 1954, A.M. 1956, The George Washington University	Va.	B.S. 1956, U.S. Coast Guard Academy	
Lawrence Eugene Forgry, Jr. A.B. 1961, The George Washington University	Ky.	Robert Owen Marritz A.B. 1960, B.S. in E.E. 1961, University of Pennsylvania	N.J.

\*Degree awarded September 30, 1964.



John William Matthews A.B. 1962, Duke University	Va.	*Charles Edwin Schurman B.S. 1950, U.S. Merchant Marine Academy	Va.
*Paul Ambrose McGuckian A.B. 1960, Dickinson College	Md.	B.S. 1951, University of California	
*Harold Wayne Messenger B.B.A. 1957, University of Oklahoma	Okla.	*Joseph Hal Shealy A.B. 1961, Duke University	Md.
Glenn Carlyle Michel A.B. 1962, The George Washington University	Md.	M. Howard Silverstein B.S. 1959, Northeastern University	Va.
Tim Richard Miles B.S.E. 1959, Vanderbilt University	D.C.	*Al Lawrence Smith B.S. 1957, Pennsylvania State University	Md.
*James Judson Millard B.S. in B.A. 1953, Georgetown University	Va.	*Thomas Lee Steffen B.S. 1957, University of Utah	Utah
*John Tipton Miller A.B. 1957, East Tennessee State University	Va.	David George Stevenson A.B. 1961, Dickinson College	N.J.
*Stanley Ross Miller B.S. in M.E., B.S. in B.A. 1961, Kansas State University of Agriculture and Applied Science	Kans.	Sol Benjamin Stiss B.S. 1956, University of Nebraska	Md.
William Mitchell Moran A.B. 1959, University of Florida	D.C.	*Robert Ray Stone, Jr. A.B. 1958, William Jewell College	Va.
David Lee Moseley B.S. in M.E. 1960, University of Texas	Texas	Lawrence Robert Sullivan B.S. 1959, Pennsylvania State University	Va.
Robert Arthur Niles B.S. in Mil.Sc. 1962, University of Maryland	Va.	Sigurd Ernest Swenson B.S.C. 1940, University of North Dakota	Texas
*Robert Leon Oswald A.B. 1960, University of Maryland	Md.	Gary Tabak B.S. in E.E. 1961, University of Pennsylvania	Pa.
Noel Alfred Pasternak A.B. 1958, Colgate University	Md.	*William Albert Van Santen, Jr. B.S. in Ch.E. 1961, Illinois Institute of Technology	Va.
Sheldon Michael Pincus A.B. 1961, University of Maryland	Md.	Kenneth Wayne Vernon B.S. 1959, University of Texas	Texas
Robert Lee Price B.S. 1959, Morris Harvey College	Va.	*Anderson Wallace, Jr. A.B. 1962, The George Washington University	Pa.
James Mackie Reyback B.S. 1943, U.S. Naval Academy	Md.	David Mardan Weitzman B.S. 1959, University of Chicago	Va.
William Carter Reynolds B.S. in M.E. 1957, Swarthmore College	Va.	*Marion Wayne Western B.S. 1961, Utah State University of Agriculture and Applied Science	Utah
*John David Rice B.S. 1958, Utah State University of Agriculture and Applied Science	Utah	Leonard Allen White B.M.E. 1959, The George Washington University	Md.
Orvil Malcolm Roetman A.B. 1950, University of Minnesota	Alaska	Edwin Arnold Williams A.B. 1961, Oklahoma State University of Agriculture and Applied Science	D.C.
B.S. in Aero.Eng. 1955, U.S. Naval Postgraduate School		*James Austin Williams B.S. in C.E. 1958, University of Nebraska	Nebr.
Michael Oliver Sawyer A.B. 1941, A.M. 1947, Ph.D. 1952, Syracuse University	N.Y.	David Erwin Winer B.S. 1956, Vanderbilt University	Va.
John Paul Scherlacher B.S. in E.E. 1960, West Virginia University	Va.	*Joseph Golden Wise B.S. 1960, Brigham Young University	Idaho

## JURIS DOCTOR

JUNE 7, 1964

Robert Emmett Corry, Jr. A.B. 1957, University of Alabama	Va.	David Stauffer Urey B.S. in I.E. 1958, Northwestern University	W.Va.
Martin Edward Goldstein B.S. in Ch.E. 1955, University of Illinois	Md.	Ronald David West A.B. 1958, The George Washington University	Md.
Radford Monroe Reams III B. of Eng. 1957, Vanderbilt University	Va.	William Stanley Wolfe B.S. in E.E. 1959, Lehigh University	Va.
Richard Lee Schmalz A.B. 1957, Centre College of Kentucky	Md.		

FEBRUARY 22, 1965

Joseph Edward Szabo B.E.E. 1956, McGill University	Va.
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\*Degree awarded September 30, 1964.



## MASTER OF LAWS

JUNE 7, 1964

Carl Adam Barrington, Jr. A.B. 1958, LL.B. 1962, University of North Carolina	N.C.	William Owen Miller B.S. 1946, University of South Carolina LL.B. 1949, Atlanta Law School	Ga.
William Hollis Bradford, Jr. A.B. 1959, LL.B. 1962, Duke University	Md.	John Leraan Ostby A.B. 1941, St. Olaf College	Minn.
Frank Owen House LL.B. 1957, St. Louis University	Ill.	LL.B. 1948, University of Minnesota Burton Louis Raimi	Mich.
Herbert Irvin Lazerow A.B. 1960, University of Pennsylvania LL.B. 1963, Harvard University	Va.	A.B. 1960, Brandeis University J.D. 1963, University of Michigan	
Harry Victor Lerner LL.B. 1940, Municipal University of Omaha	Md.	Leonard Rawicz B.S.E. 1953, University of Connecticut LL.B. 1960, The George Washington University	Md.
Simon David Levy A.B. 1959, University of Wisconsin LL.B. 1962, Harvard University	D.C.	Robert Ira Waxman B.B.A. 1959, University of Michigan J.D. 1962, Northwestern University	Ill.

FEBRUARY 22, 1965

Mervyn Ira Aronoff A.B. 1959, University of Michigan LL.B. 1962, Harvard University	D.C.	Alan Jerome Gould LL.B. 1954, State University of New York	Va.
Joseph Jay Baker B.E.E. 1960, LL.B. 1963, Catholic University of America	Ind.	*Mack Kenneth Greenberg LL.B. 1927, Boston University *Walter Thomas Margetts III A.B. 1959, Dartmouth College LL.B. 1962, University of Virginia	Mass. N.J.
Albert James Clark LL.B. 1936, B.S. 1939, Fordham University	Va.	Herman Gordon Shields B.I.E. 1954, University of Florida LL.B. 1961, University of Utah	Va.
William Arthur Crawford, Jr. LL.B. 1949, Mercer University	Ga.	*Robert J. Staal A.B. 1956, Calvin College A.M. 1958, University of Michigan LL.B. 1961, University of Miami	Va.
Salvatore Leonard Franchino A.B. 1957, Columbia University LL.B. 1960, Fordham University	D.C.		

## MASTER OF COMPARATIVE LAW

JUNE 7, 1964

Mahmood Suleiman Maghribi LL.B. 1958, University of Damascus	Libya
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FEBRUARY 22, 1965

*Awni Mohammad Al Fakhri LL.B. 1947, Baghdad University, Iraq	Iraq	*Kim Lay Tjoa LL.B. 1962, University of Indonesia, Indonesia	Indonesia
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## MASTER OF COMPARATIVE LAW (American Practice)

FEBRUARY 22, 1965

*Arun Kumar Chhabra LL.B. 1957, University of the Panjab	Va.	Gunter Heinrich von Conrad S.J.D. 1963, Cologne University, Germany	Va.
*Edward Emil Scheer Doctor of Universal Law 1931, Pazmany Peter University, Hungary	Va.		

\*Degree awarded September 30, 1964

DOCTOR OF JURIDICAL SCIENCE

JUNE 7, 1964

---

Dennis Alexander York Ark.  
B.S. in B.A., LL.B. 1950, University of  
Arkansas  
DISSERTATION: "Military Due Process:  
A Development in the Policing of  
Courts-martial Suitable for Application  
to Military Administrative Elimination  
Procedures"

FEBRUARY 22, 1965

---

Jerome Morenoff N.Y.  
A.B. 1958, B.S. in E.E. 1959, M.S. in  
E.E. 1960, Columbia University  
J.D. 1963, The George Washington  
University  
DISSERTATION: "Reconnaissance in Air  
Space and Outer Space: A Legal  
Analysis and Prognosis"

## Students Registered Spring Semester 1965

### A

Aarsand, Knut J. A.B. 1961, Marshall University	Va.	Anderson, Carol L. A.B. 1963, Colorado College	D.C.
Abbott, Kelton B. B.S. 1961, Brigham Young University	D.C.	Anderson, David A. B.S. 1963, Purdue University	Va.
Abraham, Larry J. A.B. 1964, Rollins College	D.C.	Anderson, Richard A. B.S. 1957, University of Iowa	Mich.
Ackerman, George O. A.B. 1964, Marquette University	Ind.	Andrews, Benjamin J., Jr. A.B. 1963, Allegheny College	N.Y.
Adams, John G. LL.B. 1935, University of South Dakota	D.C.	Andrews, Milton D. B.S. 1959, Phillips University LL.B. 1963, University of Oklahoma	Okla.
Adams, Thomas M. A.B. 1956, LL.B. 1960, Washington University	Va.	Angelone, David J. B.S. 1964, Boston College	Mass.
Adelman, Martin J. A.B. 1958, M.S. 1959, J.D. 1962, University of Michigan	Mich.	Angus, Robert M. B.S. 1962, Oregon State University	Calif.
Agins, Richard C. A.B. 1964, Rutgers, the State University	N.Y.	Applegate, Charles W. A.B. 1963, Washington University	Mo.
Alexander, Gary R. A.B. 1964, University of Virginia	D.C.	Arbuckle, J. Gordon A.B. 1963, University of Maryland	Md.
Allen, Harry B. A.B. 1939, A.M. 1942, University of California at Los Angeles	Va.	Arendsen, Glenn S. B.S. in Ch.E. 1958, Michigan College of Mining and Technology	Va.
Allen, Jeffrey E. B.S. 1964, Fairleigh Dickinson University	N.J.	M. Auto. Eng. 1960, Chrysler Institute of Technology	W.Va.
Alpert, Allen S. B.I.E. 1961, University of Florida	Fla.	Arvidson, Philip R. B.S. in M.E. 1961, Oklahoma State University of Agriculture and Applied Science	
Altman, Raymond F. A.B. 1963, University of Maryland	Md.	Ashley, Edward John A.B. 1964, Brown University	D.C.
Altimimi, Mehdi M. LL.B. 1952, University of Baghdad	Iraq	Asmar, Charles S., Jr. B.S. 1958, Boston University	Conn.
Alworth, Thomas A.B. 1963, Duke University	N.J.	Averill, Lawrence H., Jr. A.B. 1962, Indiana University	Mich.
Amato, Richard G. A.B. 1964, Georgetown University	D.C.	LL.B. 1964, American University	
		Ayre, John R. A.B. 1962, University of Utah	Utah

### B

Babikir, Hassan M. LL.B. 1954, Cairo University, Egypt	Egypt	Bass, Alvin S. B.S. 1962, City College, New York	N.Y.
Baker, Burton H. B.S. 1950, State College of Iowa	Mich.	Bausch, James Z. A.B. 1962, University of Miami	D.C.
Baker, Joan E. A.B. 1953, Reed College	D.C.	Bean, James H. A.B. 1962, Brigham Young University	Utah
Baker, John J. A.B. 1964, University of Pittsburgh	N.J.	Beck, Stuart E. B.S. 1964, Drexel Institute of Technology	Pa.
Baker, Robert B. A.B. 1959, Princeton University	N.Y.	Becker, William G. B.S. in M.E. 1964, Carnegie Institute of Technology	Pa.
Balaban, Alan S. A.B. 1964, Richmond College	Va.	Beckham, Donald D. A.B. 1957, University of South Carolina	Va.
Banks, Douglas W. B.S. 1963, Brigham Young University	Va.	Becmer, John B. B.S. 1963, University of Scranton	Pa.
Banner, Dean C. B.S. 1964, Brigham Young University	Idaho	Beitler, Roger B. A.B. 1962, Brigham Young University	Calif.
Barbour, David F. A.B. 1962, University of Michigan	Mich.	Belikoff, Stephen M. B.S. in E.E. 1962, University of Pennsylvania	Pa.
Bargteil, Michael E. B.S. 1962, University of Maryland	Md.	Beling, Dorothy A.B. 1951, Smith College	Va.
Baritz, Stanley E. A.B. 1964, The George Washington University	Md.	Bender, Sheldon M. B.M.E. 1961, City College, New York	N.Y.
Barnard, William M. A.B. 1962, University of Denver	Iowa	Bennett, Fred W. A.B. 1964, American University	Md.
Barney, Robert S. B.S. 1964, Southeast Missouri State College	Mo.	Bennett, Robert C., Jr. A.B. 1961, Texas Agricultural and Mechanical University	Texas
Bartos, Raymond L. A.B. 1964, California State College, Pennsylvania	D.C.	Bennison, John C. A.B. 1961, Pomona College	N.D.
Baskin, Peter M. B.S. 1964, University of Hartford	Conn.		



Benton, Margaret	Fla.	Booe, John D.	N.Y.
A.B. 1964, Ohio State University		B.S. in M.E. 1962, Duke University	
Bentzman, Marshall R.	Va.	Borsari, George R., Jr.	D.C.
B.S. in B.A. 1956, American International College		B.S. 1962, Virginia Polytechnic Institute	
LL.B. 1962, The George Washington University		Bowen, Alanson G., Jr.	N.Y.
Berg, Morton	Md.	B.S. 1962, Rensselaer Polytechnic Institute	
A.B. in Govt. 1959, The George Washington University		Bowen, Patrick G.	D.C.
Berger, Peter L.	N.Y.	B.S. 1963, Brigham Young University	
B.E.E. 1961, City College, New York		Boyer, Spencer H.	Pa.
Berk, Allen J.	N.Y.	B.S. in E.E. 1960, Howard University	
A.B. 1962, Brooklyn College		Boylan, James G.	Va.
Berkley, Richard G.	Md.	B.S. 1959, Marquette University	
B.S. 1960, Pennsylvania State University		A.M. 1961, University of Washington	
Berl, Joseph M.	N.Y.	Brack, William D.	Texas
A.B. 1964, Columbia University		A.B. 1962, Washington and Lee University	
Berman, Richard M.	Md.	Bray, Waymond D.	Ga.
A.B. 1961, University of Maryland		B.S. 1963, Howard University	
Bielawski, David	Va.	Breneman, Gary M.	Va.
A.B. 1955, University of North Carolina		A.B. 1960, University of Kansas	
Billey, James O.	N.D.	Brennan, John M.	Md.
B.S. in C.E. 1957, University of North Dakota		B.S. 1961, Spring Hill College	
Binder, Leonard F.	N.Y.	Brenner, Jerry H.	Pa.
A.B. 1956, Columbia University		B.S. 1962, Pennsylvania State University	
LL.B. 1960, New York University		Brewer, Charles M.	Pa.
Binkley, Roberta A.	Colo.	A.B. 1964, Pennsylvania State University	
A.B. 1963, Colorado State University		Bridgens, Burton G.	Iowa
Biolchini, Robert F.	Mich.	A.B. 1941, University of Iowa	
A.B. 1962, University of Notre Dame		Brier, John J.	Pa.
Birch, Thomas R., Jr.	Utah	B.S. 1963, University of Scranton	
B.S. 1963, Utah State University of Agriculture and Applied Science		Brinkman, David W.	Va.
Bisson, Gary B.	Va.	B.Ch.E. 1961, Rensselaer Polytechnic Institute	
A.B. 1959, University of New Hampshire		Brown, Bonnie	Md.
LL.B. 1962, The George Washington University		A.B. 1962, Dickinson College	
Black, Harry A.	D.C.	Brown, Denny L.	D.C.
A.B. 1961, Allegheny College		B.S. 1960, Brigham Young University	
Blackburn, Richard W.	Mich.	Brown, Dulcey A.	Va.
A.B. 1964, Michigan State University of Agriculture and Applied Science		A.B. 1957, The George Washington University	
Blackhurst, Daniel G.	Mich.	Brown, Frederick J.	Md.
B.S. in M.E. 1960, B.S. 1961, Michigan College of Mining and Technology		A.B. 1964, University of Maryland	
Blake, Lawrence D.	Mass.	Brown, James E., Jr.	Calif.
A.B. 1964, Boston College		B.S. 1957, U.S. Coast Guard Academy	
Blake, Stephen F.	D.C.	Brown, Robert L.	N.Y.
A.B. 1963, University of Maryland		A.B. 1963, Brown University	
Bliss, Richard W.	Del.	Brozost, Michael E.	N.Y.
A.B. 1964, University of Delaware		A.B. 1964, The George Washington University	
Blitz, Arthur H.	N.J.	Bruckner, Arnold D.	Ohio
A.B. 1963, University of Virginia		B.E.A. 1964, The George Washington University	
Bloom, Gilbert D.	Md.	Bruno, George C.	N.Y.
B.S. 1962, University of Maryland		A.B. 1964, Hartwick College	
Blum, Leonard	N.Y.	Brunsvold, Brian G.	Va.
A.B. 1964, Brooklyn College		B.S. 1960, Iowa State University of Science and Technology	
Blumenstock, Theodore	Va.	Brunswick, Max F.	Conn.
B.S. 1958, University of Wisconsin		A.B. 1963, American International College	
Blyveis, Barry	Md.	Buckler, William H.	Ky.
A.B. 1961, University of Michigan		B.S. 1961, M.S. 1961, University of Louisville	
Boesch, William S.	Va.	Budarz, Virginia M.	Conn.
A.B. in Govt. 1963, The George Washington University		A.B. 1964, Connecticut College	
Boler, James R.	D.C.	Buenzie, Robert J.	N.J.
B.M.E. 1961, University of Minnesota		B.S. 1964, Drexel Institute of Technology	
Bond, David M.	Md.	Bullis, Gary G.	Nev.
B.S. 1962, University of Maryland		A.B. 1962, University of Nevada	
Bond, Robert T.	Md.	Bunce, John E.	Va.
A.B. 1954, Southern Missionary College		A.B. 1960, Yale University	
Bondareff, Richard F.	D.C.	Burgess, Frederick F., Jr.	N.Y.
A.B. 1963, Cornell University		B.S. 1958, U.S. Coast Guard Academy	
Boone, Samuel T.	Calif.	Burke, Timothy P.	Pa.
A.B. 1958, University of California at Berkeley		A.B. 1963, Pennsylvania State University	
LL.B. 1963, University of Santa Clara			

Burnette, Wilbert G. A.B. 1957, Emory University	Va.	Byrd, David D. A.B. 1927, LL.B. 1930, University of Alabama	Ala.
Burrup, Mont L. B.S. 1962, University of Utah	Va.		

# C

Cameron, Donald S. A.B. 1962, Johns Hopkins University	N.Y.	Cole, Daniel R., Jr. A.B. 1963, Washington and Lee University	D.C.
Cammack, Ernest G., Jr. B.S. in I.M. 1959, Georgia Institute of Technology	Ga.	Cole, Diane P. A.B. 1962, Pembroke College	D.C.
Campbell, Bruce G. B.S. 1963, Bowling Green State University	Ohio	Coleman, Mary F. A.B. 1959, University of Richmond	Va.
Carpenter, James W., III A.B. 1959, Oklahoma Baptist University	Va.	Collier, Robert A.B. 1964, University of Vermont	Mass.
Carter, William K. A.B. 1964, American University	Va.	Collins, George J., Sr. B.S. 1953, Southern Connecticut State College	D.C.
Casey, Michael K. B.S. 1964, West Virginia University	D.C.	A.M. 1955, Yale University Ed.D. 1958, Columbia University	
Cash, James B., Jr. A.B. 1951, The George Washington University	Va.	Comeau, Robert F. B.S. 1957, U.S. Military Academy	Mass.
Cassani, Rudolph V. B.S. 1950, State University of New York Maritime College	Va.	Conner, John H. A.B. 1963, Gettysburg College	Pa.
Casselman, William E., II A.B. 1963, Claremont Men's College	N.Y.	Constant, George M. B.S. 1958, Virginia Polytechnic Institute	Va.
Castellano, Joseph A.B. 1959, Princeton University	N.Y.	Cook, Patrick T., Jr. A.B. 1960, Beloit College	Md.
Chernoff, Paul A. B.S. in M.E. 1961, Tufts University	D.C.	Cooper, David R. A.B. 1962, Pennsylvania State University	Pa.
Chichester, Guy D. A.B. 1963, The George Washington University	D.C.	Cooper, Gafford T., Jr. B.S. 1963, Clemson University	S.C.
Chickering, John B. B.S. 1945, U.S. Military Academy M.S. 1950, Purdue University	Va.	Cooper, John K. A.B. 1963, Lafayette College	N.J.
Chizever, Gerald M. B.B.A. 1964, The George Washington University	N.Y.	Cooper, Steven M. A.B. 1964, The George Washington University	D.C.
Cho, Soung Y. LL.B. 1953, Seoul University, Korea A.M. 1957, Ph.D. 1963, Tulane University	Korea	Cortellesa, Vincent J. B.S. 1964, New York University	N.Y.
Chopp, Joseph H., Jr. B.S. 1959, Waynesburg College LL.B. 1962, West Virginia University	W.Va.	Costley, Lloyd M. A.B. 1960, Trinity College	S.C.
Chorkavy, Leon, Jr. B.S. 1962, New York University	N.Y.	Coult, John H. B.S. in E.E. 1961, Pennsylvania State University	Pa.
Christensen, Thomas M. A.B. 1961, Hamilton College	Va.	Cox, Charles S., Jr. A.B. 1962, University of Virginia	D.C.
Church, Dale W. B.S. 1962, Oregon State University	Oreg.	Cox, Roger D. B.S. 1964, Brigham Young University	Idaho
Clark, Donald H. B.S. 1959, U.S. Naval Academy	Va.	Craig, Jerry D. B.S. in E.E. 1961, University of Miami	Va.
Clark, Robert B. A.B. 1949, Harvard University	D.C.	Crawford, David L., Jr. B.S. in B.A. 1964, Georgetown University	Va.
Clark, Robert G., III B.S. 1964, Massachusetts Institute of Technology	Md.	Crawford, Meredith P., Jr. A.B. 1960, Vanderbilt University	Md.
Cochran, John M., III A.B. 1963, College of William and Mary	Va.	Cremins, William D. A.B. 1960, St. Bonaventure University	S.C.
Cohen, Barry A. A.B. 1964, Rutgers, the State University	N.J.	Cretella, Henry A. B.S. 1949, U.S. Coast Guard Academy LL.B. 1956, Georgetown University	Md.
Cohen, Jack V. A.B. in Govt. 1963, The George Washington University	Md.	Crimmins, Nancy L. A.B. 1964, The George Washington University	D.C.
Cohen, Robert A. A.B. 1963, Ohio University	N.Y.	Crooks, Joseph W. A.B. 1964, Lehigh University	D.C.
Cohen, William M. A.B. 1962, Michigan State University of Agriculture and Applied Science	N.Y.	Culbertson, Samuel A., III A.B. 1963, Claremont Men's College	Ill.
Cohrsen, John J. B.S. 1961, City College, New York M.S. 1963, McGill University	N.Y.	Currier, Thomas E. B.E. 1960, Yale University M.C.E. 1964, University of Delaware	Va.
Coldren, John I., III B.S. 1962, Pennsylvania State University	N.Y.	Curry, Edward L. A.B. 1962, Dickinson College	D.C.
	Pa.	Czajkowski, Frank H. A.B. 1957, LL.B. 1959, St. John's University	Md.



# D

Daiger, Gordon W. A.B. 1953, Princeton University	D.C.	Dewhurst, Stephen B. A.B. 1964, The George Washington University	Va.
Dalton, Robert E. A.B. 1953, College of the Holy Cross LL.B. 1956, Columbia University	Mass.	Diamond, Anthony J. A.B. in Govt. 1963, The George Washington University	Del.
Daly, Fred H. B.S. 1960, Fordham University M.B.A. 1961, New York University	Va.	Dick, Michael T. A.B. 1964, University of Oklahoma	Va.
Danzansky, Stephen I. A.B. 1961, Washington and Lee University	D.C.	Dickerson, Harry A. A.B. 1964, University of Vermont	N.Y.
Darley, Stephen F. B.S. 1964, Utah State University of Agriculture and Applied Science	Utah	Dietze, John L. A.B. 1964, Hofstra College	N.Y.
Dault, Gerard R. A.B. 1960, St. Bernardine of Siena College	N.Y.	Dilligan, Michael A. B.Ch.E. 1961, Polytechnic Institute of Brooklyn M.S. 1962, University of Connecticut	N.Y.
Daus, Donald G. B.S. in Ch.E. 1953, University of Illinois M.S. 1954, Michigan State University of Agriculture and Applied Science	Ind.	Distelhorst, Craig T. B.S. 1963, Washington and Lee University	D.C.
David, Thomas M., Jr. A.B. 1960, Georgetown University	D.C.	Dixon, Edward A., Jr. A.B. 1962, Princeton University	Pa.
Davidson, Robert M. B.S. in Ch.E. 1964, Purdue University	N.Y.	Dobyns, Kenneth W. B.E.E. 1963, University of Virginia	Okla.
Davis, Emily C. B.S. 1949, Columbia University	Va.	Dolan, Hugh J. A.B. 1950, LL.B. 1953, St. John's College	N.Y.
Davis, Kelley R. A.B. 1962, University of Notre Dame	Calif.	Donahue, Bernard A. B.S. in C.E. 1955, University of Washington	Ala.
Davis, Mack E. B.S. 1951, LL.M. 1957, University of South Carolina	D.C.	Donovan, Walter J. B.S. 1947, U.S. Naval Academy	Md.
Day, James K. M. A.B. 1964, Bucknell University	Md.	Dost, Gerald A. B.S. 1960, Pennsylvania State University	Va.
Deitz, Merritt S., Jr. A.B. 1961, University of Kentucky	Ky.	Drescher, Jared M. B.S. 1964, University of Vermont	N.Y.
Deitz, William T. Litt. B. 1953, Rutgers, the State University	Va.	Dresser, James N. B.S. in E.E. 1959, Purdue University	Va.
Demanio, Louis J. A.B. 1959, University of Connecticut LL.B. 1963, Vernon Law School	Md.	Dreyfus, Edward D. B.S. in E.E. 1960, Washington University	Mo.
DeMello, Vincent K. A.B. 1960, Marquette University	Ohio	Drissel, Elizabeth J. A.B. 1964, Rollins College	Va.
Denbo, James R. A.B. 1963, University of Michigan	D.C.	Dropkin, Robert F. B.S. in M.E. 1963, Drexell Institute of Technology	N.Y.
Denenberg, Daniel K. A.B. 1965, University of Maryland	Md.	Dryden, David B. B.S. 1960, Brigham Young University	Va.
DeNourie, Herbert L. B.S. 1958, University of Notre Dame	Va.	Duensing, Hollis G. A.B. 1959, The George Washington University	D.C.
DePassalacqua, John L. A.B. 1961, University of Puerto Rico LL.B. 1964, Catholic University of Puerto Rico	Puerto Rico	Dulin, Jacques M. B.S. 1957, University of Chicago	Ohio
Derry, Peter E. A.B. 1962, Boston College	Va.	Dunbar, David H. A.B. 1964, Ohio Wesleyan University	Ohio
DeSeife, Rodolphe J. A. A.B. 1943, College de la Ste. Famille LL.B. 1955, Catholic University of America	D.C.	Durkin, Lawrence A. A.B. 1963, University of Scranton	Pa.
Determan, Sara-Ann H. A.B. 1960, University of Delaware	D.C.	D'Urso, Mario Dr. of Laws 1963, Palermo University, Italy	Italy
Detweiler, John R. A.B. 1964, College of Idaho	Idaho	Dutson, Roger S. B.S. 1962, Utah State University of Agriculture and Applied Science	Idaho
Dewhurst, John W. B.I.E. 1960, Georgia Institute of Technology	Va.	Dyer, Norman C. B.S. in S.S. 1955, Georgetown University	Va.
		Dyson, Edward E. B.B.A. 1962, The George Washington University	Va.

# E

Eaton, Russell, III A.B. 1962, Miami University	Va.	Edelman, Lawrence A.B. 1965, University of Maryland	Md.
Edell, Ira C. B.E.E. 1958, Polytechnic Institute of Brooklyn	Md.	Edelstein, Gerald F. A.B. 1961, University of Vermont LL.B. 1964, Cornell University	N.Y.



Edmisten, Martha J. A.B. 1960, A.M. 1962, University of North Carolina	Va.	Eleazer, William R. A.B. 1953, Vanderbilt University	Va.
Edmisten, Rufus L. A.B. 1963, University of North Carolina	N.C.	Elgin, Arthur C., Jr. B.S.E. 1960, Princeton University	Calif.
Edmiston, John W. A.B. 1963, Miami University	Va.	Elgin, Laurence A. A.B. 1963, Northwestern University	D.C.
Edwards, Elgin C. B.Ch.E. 1958, University of Virginia	La.	Elliott, Robert M. B.S. 1961, Pennsylvania State University	Pa.
Edwards, Franklin R. A.B. 1958, A.M. 1960, Bucknell University	D.C.	Epstein, Robert H. B.S. in E.E. 1963, University of Maryland	Md.
Ph.D. 1964, Harvard University		Eschenbach, Eberhard LL.B. 1963, Cologne University, Germany	Germany
Edwards, Sheldon M. B.S. 1958, M.S. 1959, Brigham Young University	Nev.	Estrella, Arturo A.B. 1944, LL.B. 1952, University of Puerto Rico	Puerto Rico
Egan, Russell J. A.B. 1962, Pennsylvania State University	N.J.	Evans, Noel K. A.B. 1963, University of Maine	Maine
Elderkin, Charles B. B.S. in M.E. 1960, Purdue University	Ohio	Eynon, George L., Jr. A.B. 1963, Colgate University	Pa.
LL.B. 1964, The George Washington University		Ezrin, Alvin B.S. in Phar. 1963, The George Washington University	D.C.

## F

Farley, Walter C. B.S. 1960, University of Illinois	W.Va.	Flores, Benny E. A.B. 1963, New Mexico Highlands University	N.M.
Farquhar, Thomas W. A.B. 1960, The George Washington University	D.C.	Flynn, Brian N. A.B. 1964, Rutgers, the State University	N.J.
Fass, Irwin LL.B. 1941, The George Washington University	Md.	Flynn, John T., Jr. A.B. 1964, University of Notre Dame	Md.
Favor, Freddie G. A.B. 1964, University of Arkansas	Ark.	Fong, Hiram L., Jr. A.B. 1962, Lafayette College	Hawaii
Feder, Samuel M. A.B. 1961, Yeshiva University	Md.	Foot, Alfred P. A.B. 1963, Yale University	N.Y.
Fehnel, Paul O. B.S. in Phar. 1954, Temple University	Md.	Footer, Michael B.S. 1963, American University	D.C.
Feldman, Arthur L. A.B. 1963, Tulane University	N.J.	Ford, Paul H. B.S. 1951, University of Maryland	Md.
Feldman, Howard W., Jr. A.B. 1960, University of Rochester	N.Y.	Ford, Robert N. A.B. 1952, The George Washington University	Md.
Feldman, Jon A. A.B. 1962, The George Washington University	N.J.	Forsman, Alpheus E. A.B. 1963, The George Washington University	N.D.
Fettig, Ronald C. B.S. 1956, Fordham University	Va.	Foster, Bernard A., III A.B. 1964, University of the South	Md.
Fielder, Frederick A., Jr. B.S. in M.E. 1963, Duke University	Ill.	Foster, Paul M. B.S. 1950, Ohio State University	Va.
Figinski, Marion A. A.B. 1959, Johns Hopkins University	Md.	Fournier, Arthur E., Jr. B.E. 1957, Yale University	Conn.
LL.B. 1962, University of Maryland		Fowler, Renn C. A.B. 1963, University of Maryland	Md.
Fillmore, Winston J. B.S. 1963, University of Utah	Utah	Fox, Samuel L. B.S. 1963, University of Maryland	D.C.
Fischbein, Stuart M. A.B. 1962, University of Florida	N.Y.	Fox, Stephen P. B.S. in E.E. 1964, Northwestern University	Ill.
Fiak, Robert C. A.B. 1963, Yale University	N.Y.	Fox, Thomas C. A.B. 1963, Muskingum College	Pa.
Fitz, William H. A.B. 1964, Washington and Lee University	D.C.	Francoeur, Philip M., Jr. A.B. 1963, Colgate University	N.Y.
Fitzpatrick, Robert B. A.B. 1964, The George Washington University	Md.	Frank, James J. B.S. 1961, Austin Peay State College	D.C.
Flanagan, Jerome V. B.S. 1953, U.S. Coast Guard Academy	Mass.	Frank, Mark K., III B.S. in F.S. 1964, Georgetown University	Fla.
Flanders, Harold N. B.S. 1960, University of Colorado	Va.	Frank, Paul A. A.B. 1963, The George Washington University	Md.
Fleming, Joe W., II A.B. 1959, University of Arkansas	Ark.	Frazier, Henry B., III A.B. 1956, University of Virginia	Va.
LL.B. 1963, The George Washington University		Freedman, Ilona E. A.B. 1962, Mount Holyoke College	Va.
Fleming, Joseph C., Jr. B.S. 1964, Brigham Young University	Ga.		

Freeh, William L. B.S. in M.E. 1959, University of Dayton LL.B. 1962, University of Baltimore	Pa.	Friedman, Gordon S. A.B. 1964, Miami University	Ohio
Freeman, Martin H. A.B., B.S. in M.E. 1961, Lehigh University	Md.	Friedman, Martin J. A.B. 1964, University of Vermont	N.Y.
Freer, Robert E., Jr. A.B. 1963, Princeton University	D.C.	Frost, Stanley F. A.B. 1962, New Mexico Highlands University	N.M.
Freitag, Paul W. A.B. 1964, University of Nevada	Nev.	Fry, Harry A., Jr. B.S. 1964, Pennsylvania State University	Pa.
Frick, Gottlieb J., II A.B. 1963, Cornell University	Mo.	Fuchs, Beatrice G. A.B. 1941, St. John's University LL.B. 1944, St. Lawrence University	Md.
Fricker, John E. A.B. 1964, The George Washington University	Ill.		

## G

Galanthay, Theodore E. B.E.E. 1961, Clarkson College of Technology	N.Y.	Glanzman, Gerald H. B.S. in M.E. 1964, Purdue University	Ind.
Gallagher, Russell J. A.B. 1962, University of California at Berkeley	Calif.	Glaser, Michael L. A.B. 1961, The George Washington University	D.C.
Garber, Stanley N. B.S. in I.E. 1962, University of Missouri	Mo.	Glasgow, Gary F. A.B. 1963, University of Oklahoma	D.C.
Garcia, Maria D. B.S. in F.S. 1959, LL.B. 1962, Georgetown University	Puerto Rico	Glass, Martin L. A.B. 1956, M.S. 1957, University of Southern California LL.B. 1961, University of California at Los Angeles	Va.
Garcia, Max N. A.B. 1963, University of Hawaii	Hawaii	Goehring, Jack J. A.B. 1963, University of Connecticut	Conn.
Gardner, Paul L. B.S. in I.E. 1962, University of Missouri	Mo.	Gold, Benjamin A. A.B. in Govt. 1962, The George Washington University	Va.
Gaston, Robert T. A.B. 1963, College of William and Mary	D.C.	Goldberg, Jack G. B.B.A. 1964, The George Washington University	N.Y.
Gates, John R. A.B. 1964, Dickinson College	Pa.	Goldberg, James M. B.S. 1961, Syracuse University	D.C.
Gates, Ronald M. A.B. 1963, Franklin and Marshall College	N.Y.	Goldblatt, Herbert L. A.B. 1963, The George Washington University	D.C.
Gealow, Jon C. B.S. in E.E. 1959, M.S. in E.E. 1960, University of Illinois	Ind.	Goldman, Ronald M. B.S. in E.E. 1961, Illinois Institute of Technology	D.C.
Gell, Stephen N. A.B. 1960, Dartmouth College LL.B. 1963, University of Pennsylvania	Mass.	Goldstein, Edward W. B.S. 1963, Pennsylvania State University	D.C.
Geraghty, John J. A.B. 1957, S.T.B. 1959, St. Mary's Seminary and University	Pa.	Goldstein, Jack C. B.S. in M.E. 1964, Purdue University	Md.
Gerber, Fredra L. A.B. 1963, American University	D.C.	Golembe, Carter H. A.B. 1946, A.M. 1947, Ph.D. 1952, Columbia University	Va.
Gilbert, Arthur S., III A.B. 1963, Vanderbilt University	D.C.	Good, Edward L. A.B. 1964, Washington and Jefferson College	Va.
Gilbert, Jerrold LL.B. 1962, American University	D.C.	Goodman, Michael E. A.B. 1962, Rutgers, the State University	N.Y.
Gildenhorn, Stanton J. A.B. 1964, The George Washington University	D.C.	Gordon, Daniel A. A.B. 1960, Dartmouth College	N.Y.
Gillespie, Noel R. A.B. 1952, Reed College A.M. 1954, Johns Hopkins University	Oreg.	Gordon, Richard F. B.S. 1964, Utah State University of Agriculture and Applied Science	Utah
Gillilan, Ronald E. A.B. 1964, Ohio University	Ohio	Gordon, Seth B.E.E. 1959, Pratt Institute M.S. in E.E. 1962, University of Connecticut	N.Y.
Gilmore, Florabelle A.B. 1957, LL.B. 1960, Drake University	Iowa	Gordon, Sonya L. A.B. 1953, Barnard College LL.B. 1955, Columbia University	N.Y.
Gimer, Richard H. B.S. 1962, State College of Iowa	Iowa	Gotkin, Michael M. A.B. 1963, Brooklyn College	N.Y.
Ginea, Ralph J. B.S. 1958, Brigham Young University	Utah	Gottesman, Roberta K. A.B. in Ed. 1961, The George Washington University	Md.
Gins, Richard H. A.B. 1964, University of North Carolina	Md.	Graham, David L. B.S. 1963, University of Maryland	Md.
Girvin, John W., Jr. B.E.E. 1960, University of Virginia	Va.		



Graham, Robert L.	Va.	Greene, Mary L.	Ohio
B.B.A. 1964, The George Washington University		A.B. 1939, University of North Carolina	
Granger, Kerry J.	Kans.	A.M. 1940, Northwestern University	
A.B. 1964, Kansas State Teachers College		LL.B. 1957, Cleveland-Marshall Law School	
Grant, Arnold	N.Y.	Greene, Timothy G.	Idaho
B.S. 1962, University of Alabama		A.B. 1961, University of Idaho	
Gray, John C.	N.Y.	Greenlee, David A.	Ohio
A.B. 1964, Wesleyan University		B.I.E. 1961, Georgia Institute of Technology	
Gray, Mary S.	Va.	Greenwood, Richard E.	Iowa
A.B. 1950, Denison University		A.B. 1959, University of Iowa	
Gray, Nellie J.	Texas	Gregory, Roger M., Jr.	N.C.
B.S. 1948, A.M. 1949, Texas Woman's University		B.E. 1947, U.S. Naval Academy	
LL.B. 1959, Georgetown University		Gross, John H.	Ohio
Green, Edward T.	D.C.	B.S. 1964, University of Pennsylvania	
A.B. 1961, The George Washington University		Grossberg, Gerald P.	D.C.
Green, George S. Jr.	Va.	A.B. 1962, Pennsylvania State University	Utah
B.S. in M.E. 1960, Bucknell University		Grover, Blair J.	
Green, Sara E.	Va.	B.S. 1964, Utah State University of Agriculture and Applied Science	
A.B. 1960, University of North Carolina		Gumpert, Karella A. J.	N.Y.
Green, Stanley B.	N.Y.	A.B. 1963, The George Washington University	
B.E.E. 1962, City College, New York		Guss, Stephen E.	Md.
Greene, Donald R.	Conn.	A.B. 1964, American University	
B.S. in E.E. 1961, University of Miami		Gyarfas, William J.	D.C.
Greene, Edward A.	Mass.	B.S. 1964, University of Pittsburgh	
B.S. in I.E. 1960, Northeastern University			

## II

Haase, Barry L.	D.C.	Hart, David B.	Va.
B.B.A. 1962, University of Massachusetts		A.B. 1963, The George Washington University	
Habel, Ronald W.	D.C.	Hartary, Joseph W.	Md.
B.S. 1960, Utah State University of Agriculture and Applied Science		B.S. 1959, Grove City College	
Hadland, Kenneth W.	Ill.	Hatch, Douglas L., Jr.	Va.
B.S. in E.E. 1963, Purdue University		A.B. 1962, American University	
Hadley, Donald H.	Md.	Hatchadorian, Mathew J.	Ohio
A.B. 1964, The George Washington University		A.B. 1963, Colgate University	
Hagenstad, Melvin T.	N.J.	Hauser, Lawrence L.	Conn.
B.E.E. 1961, University of Minnesota		A.B. 1964, Georgetown University	
Haislip, Gene R.	Va.	Havelka, Ronnie D.	Ill.
A.B. 1960, B.C.L. 1963, College of William and Mary		B.S. 1964, University of Illinois	Nebr.
Hallam, Charlotte B.	Md.	Hayes, Joseph M.	
A.B. 1960, Antioch College		A.B. 1956, Williams College	D.C.
Halpert, Stuart D.	R.I.	Haynes, James R.	
A.B. 1964, Brown University		A.B. 1961, Fisk University	Utah
Hamburg, Mervyn	Md.	Healy, Timothy W.	
B.S. 1958, LL.B. 1961, Temple University		B.S. 1962, Utah State University of Agriculture and Applied Science	
Hamilton, James B.	D.C.	Hearn, Alexander M.	Va.
A.B. 1963, Rollins College		LL.B. 1951, The George Washington University	
Hammer, Norman F., Jr.	N.J.	Heasley, Ross E.	D.C.
A.B. 1962, Ohio Wesleyan University		A.B. in Govt. 1960, The George Washington University	
Hamrick, Claude A. S.	Fla.	Heisler, Edwin A.	Conn.
B.S. in E.E. 1963, University of Florida		B.S. 1957, Tufts University	
Haney, Franklin L.	Tenn.	Heizmann, James L.	Pa.
B.S. in B.A. 1962, University of Tennessee		A.B. 1964, Yale University	
Harbin, Robin H.	Ala.	Heller, Stuart A.	N.J.
A.B. 1962, University of Alabama		B.Ch.E. 1962, Rensselaer Polytechnic Institute	
Harding, Don L.	Idaho	Helwig, Thomas V.	Mich.
B.B.A. 1964, The George Washington University		A.B. 1964, Cambridge University, England	
Harding, Phillip A.	N.J.	Helyer, Joseph A.	Del.
A.B. 1964, St. Anselm's College		B.S. 1962, Bowling Green State University	
Hardy, Heber P.	Nev.	Henderson, John W., Jr.	Iowa
B.S. 1954, Brigham Young University		A.B. 1958, The George Washington University	
Hargett, Robert F., III	D.C.	Hendricks, John C.	Pa.
A.B. 1965, University of Maryland		A.B. 1963, Dickinson College	
Harney, Gregory N.	D.C.	Heneghan, Michael H.	Conn.
A.B. 1960, The George Washington University		B.S. 1962, College of the Holy Cross	
Harper, Ralph E.	Md.	Henretta, David H., Jr.	Va.
A.B. 1956, University of Rochester		A.B. 1949, LL.B. 1952, The George Washington University	
Harrington, Louis D.	Pa.		
A.B. 1961, Earlham College			
A.M. 1963, University of Pennsylvania			



Henry, Francis B. B.S. in M.E. 1958, University of South Carolina	N.Y.	Holter, Dwight J. B.S. 1959, M.S. 1963, University of North Dakota	N.Y.
Henson, William C. B.S. 1961, Morris Harvey College	W.Va.	Honey, Charles L. A.B. 1960, University of Arkansas	Va.
Herbater, George A. B.S. in E.E. 1960, Lafayette College	N.Y.	Honig, Roger S. B.B.A. 1964, The George Washington University	Va.
Hertlihy, William F. A.B. 1959, LL.B. 1962, University of Maryland	Conn.	Hoover, Wayne B.S. in Ch. E. 1961, Purdue University	La.
Herman, Seymour B.S. 1948, LL.B. 1952, New York University	N.Y.	Hope, Henry W. B.S. in I.E. 1962, University of Tennessee	Va.
Herndon, David L. A.B. 1963, Union College	Ill.	Hope, Robert S. B.S. 1950, U. S. Merchant Marine Academy	Va.
Hertz, Martin A. A.B. in Govt. 1962, The George Washington University	D.C.	Hopkins, Bruce R. A.B. 1964, University of Michigan	Mich.
Hiatt, Tom B.S. 1963, University of Illinois	Ill.	Horowitz, Howard B. B.S. 1964, University of Maryland	D.C.
Hickey, Robert J. A.B. 1959, Providence College LL.B. 1962, Harvard University LL.M. 1964, Georgetown University	D.C.	Hosford, Bowen I. A.B. 1939, Emory University A.M. 1956, American University	Va.
Hickson, Carolyn L. A.B. 1964, The George Washington University	D.C.	Hosmer, Bruce E. B.S. in Ch.E. 1964, Rensselaer Polytechnic Institute	N.Y.
Higginson, Edmund J. B.S. 1963, Mount Saint Mary's College	Md.	Hoesner, William L. A.B. 1963, University of Idaho	Idaho
Hilken, Henry E. A.B. 1961, Harvard University	Md.	Hougland, Charles A. B.S. 1959, U. S. Naval Academy	Va.
Hill, David L. B.S. 1963, University of Alabama	Md.	Houliston, Michael L. A.B. 1964, The George Washington University	Va.
Hill, F. John B.S. 1964, Brigham Young University	Idaho	Houston, John D. A.B. 1963, Haverford College	Pa.
Himelstein, Elliott M. A.B. 1962, Indiana University	Ariz.	Houston, Joseph G. B.S. 1961, Ohio Northern University	Ohio
Hinderstein, Philip M. B.E.E. 1962, City College, New York	N.Y.	Howard, Robert E. A.B. 1964, University of Vermont	N.Y.
Hink, Frederick P. A.B. 1964, The George Washington University	Va.	Howes, Harrison S. A.B. 1950, University of Miami LL.B. 1957, Georgetown University	Md.
Hirsch, Gladys E. A.B. 1940, Hunter College	Md.	Huber, Thomas P. B.S. 1959, Marquette University	Wis.
Hirsch, Joseph I. B.S. in C.E. 1961, Purdue University	Ohio	Huddy, Wendell K. A.B. 1962, University of Minnesota	Hawaii
Hoare, George P. B.M.E. 1956, Stevens Institute of Technology LL.B. 1960, Fordham University	N.J.	Hudgins, Richard S. A.B. 1955, The George Washington University	D.C.
Hobart, James D. B.S. 1958, University of Illinois	Ohio	Huff, Lawrence A. A.B. 1961, Stanford University	Mich.
Hochberg, Philip R. B.S. 1961, Syracuse University	Md.	Huff, Richard L. A.B. 1955, Lincoln University	Va.
Hoffman, Lawrence A. B.S. 1962, Massachusetts Institute of Technology	N.Y.	Hughes, Thomas A., Jr. A.B. 1963, Hampden-Sydney College	Va.
Hoffman, Peter B. B.S. 1964, Cornell University	N.Y.	Hughes, Thomas J. A.B. 1964, University of Notre Dame	N.J.
Hoffman, Thomas J. A.B. 1962, Kenyon College B.S. 1963, University of Michigan	Ohio	Humphreys, Robert R. A.B. 1959, University of Washington	Oreg.
Hoinkes, Horat D. B.S. 1962, University of Rochester	Germany	Hunt, Ross F., Jr. B.E.E. 1962, University of Virginia	Va.
Holcomb, Richard B. A.B. 1960, A.M. 1963, University of Oklahoma	Va.	Hunter, John S. A.B. 1961, Georgetown University	Fla.
Holland, Christopher M. B.S. 1958, U. S. Coast Guard Academy	Fla.	Hurwitz, Stephen I. A.B. 1964, Johns Hopkins University	Md.
Hollingsworth, John M. A.B. 1963, University of Pittsburgh	Pa.	Huston, Graham C. A.B. 1963, Duke University	Conn.
Holmes, Clifton L. A.B. 1961, University of Texas	Md.	Hutchins, Kenneth G. A.B. 1963, University of Texas	D.C.
		Hynes, Denis E. B.S. 1964, St. John's University	Va.
<b>I</b>			
Ingeneri, Philip L. A.B. 1963, University of Maine	Maine	Ishikawa, David T. A.B. 1961, San Jose State College	Calif.
Ingram, Mark W. B.S. 1942, University of Maine	Va.	Ishmael, Randall W. B.S. 1963, Arkansas State College	Ark.

Isikoff, Nathan R. A.B. 1964, Cornell University	Md.	Ives, John G. A.B. 1954, Princeton University	N.J.
Itnyre, Edwin R. A.B. 1952, The George Washington University	Md.		

### J

Jackson, Thomas F., III A.B. 1962, Southwestern at Memphis	D.C.	Johnson, Dale E. B.S. in M.E. 1959, University of Washington	Va.
Jackson, William E. B.S. 1962, University of Rochester	D.C.	Johnson, David W. B.S. 1958, University of Maine	Md.
Jacobs, Harry W. B.S. in F.S. 1955, Georgetown University	D.C.	Johnson, James A. R. A.B. 1960, Occidental College	Calif.
Jacobs, Howard S. B.S. 1964, University of Vermont	N.Y.	Johnson, Raymond C. B.S. 1958, Wisconsin State College	Wis.
Jacobson, Harold S. B.S. 1962, University of Wisconsin	D.C.	Johnston, Rodney K. B.S. 1959, U. S. Naval Academy	D.C.
Jacox, Gilbert L. B.S. 1960, University of Maryland	D.C.	Jolly, Charles N. B.S. 1964, College of the Holy Cross	N.J.
James, Robert B., Jr. LL.B. 1951, Catholic University of America	Va.	Jordan, Kim L. B.S. 1963, Brigham Young University	D.C.
Jenkins, Donn K. B.M.E. 1956, University of Virginia	Va.	Jorden, James F. A.B. 1963, Dickinson College	Pa.
Jennings, Renz D. A.B. 1964, Arizona State University	Ariz.	Judd, Robert L. A.B. 1963, Kalamazoo College	Va.
Jennings, Rutherford C. A.B. 1961, Northwestern University	Va.	Judd, Robert L. B.S.E. 1964, University of Michigan	Texas
Jensen, Robert E. B.S. 1960, Miami University	Va.	Jurecka, James R. A.B. 1957, Rice University	Texas
Jett, George W. A.B. 1961, University of Kentucky	Ky.	Just, William H. B.M.E. 1963, University of Delaware	Pa.
Johnson, Brian A. A.B. 1963, Duke University	Md.	Justice, Courtney B. A.B. 1963, Wabash College	Ind.

### K

Kadison, James B.S. 1962, University of Maryland	Md.	Kelly, Thomas L. A.B. 1963, Albright College	Pa.
Kagan, Gerald B. A.B. 1964, University of Massachusetts	Mass.	Kenny, Mathew R. B.S. 1961, College of the Holy Cross	N.Y.
Kamrath, Raymond L. A.B. 1961, Montana State University	Va.	LL.B. 1964, Georgetown University	Ohio
Kanter, David M. B.S. 1964, American University	Md.	Kent, Katherine A. A.B. 1950, Mississippi State College for Women	Ohio
Karlin, Stanley M. A.B. 1962, University of Maryland	Md.	A.M. 1951, University of Chicago	
Karlos, Asimina M. A.B. 1963, Barnard College	N.J.	LL.B. 1957, Cleveland-Marshall Law School	
Karsner, George R. B.S. 1964, University of Kentucky	Ky.	Kern, William A. A.B. 1955, LL.B. 1961, Yale University	Md.
Kash, Lawrence S. A.B. 1964, Bucknell University	Ky.	Kerr, John W., Jr. B.B.A. 1960, College of William and Mary	Va.
Kass, Benny L. B.S. 1957, Northwestern University	D.C.	Kerr, Peyton A., III A.B. 1965, The George Washington University	D.C.
LL.B. 1960, University of Michigan			
Katz, Avrum B.S. in E.E. 1962, Illinois Institute of Technology	Ill.	Keaselman, Barry J. B.S. 1962, Pennsylvania State University	N.Y.
Katz, Jay A. A.B. 1964, University of Rhode Island	N.Y.	Keasler, Steven R. A.B. 1964, Brooklyn College	N.Y.
Katz, Steven M. B.S. 1962, University of Maryland	D.C.	Keyes, Norman R., Jr. A.B. 1960, Dickinson College	N.C.
Katze, Edward A.B. 1963, University of New Hampshire	D.C.	Keys, Richard C. B.S. in B.A. 1958, American University	Md.
Kaufmann, Elsa R. A.B. 1962, Wellesley College	Mass.	Kiel, Frank W. A.B. 1950, University of Pittsburgh	Md.
Kavrukov, Ivan S. B.E.E. 1964, The George Washington University	Va.	M.D. 1954, The George Washington University	
Keating, Geoffrey T. A.B. 1962, Ohio Wesleyan University	Va.	Kilpatrick, James W. A.B. 1964, University of Mississippi	D.C.
Keenan, Michael B. B.S. in Ch.E. 1957, University of Mexico	Okla.	Kimmel, Edward K. A.B. 1958, University of Delaware	D.C.
Keene, Robert B. B.S. in B.A. 1958, Indiana University	Va.	Kimmel, Michael A.B. 1959, Princeton University	N.Y.
Kelley, John F. A.B. 1964, St. Anselm's College	Mass.	Kimmel, Morton R. A.B. 1962, Temple University	Del.
		Kindness, Gary S. B.S. in E.E. 1961, University of Wisconsin	Wis.



Kirn, Walter N., Jr. A.B. 1960, Princeton University M.S. 1962, Ohio State University	Ohio	Kosa, Milton E. B.S.C. 1949, LL.B. 1950, Creighton University	Va.
Klapinsky, Raymond J. A.B. 1960, University of Delaware	Del.	Kovnat, Ruth B. A.B. 1959, Bryn Mawr College	D.C.
Klauber, Martin A.B. 1963, Rutgers, the State University	N.J.	Krakoff, Jerry H. B.S. 1964, Duquesne University	Pa.
Kline, Stephen W. A.B. 1962, Temple University	Pa.	Kraus, Melvin B.S. 1962, Washington University	Mo.
Kluttz, John L. A.B. 1964, University of Virginia	Va.	Kraus, Stephen W. B.S. 1964, Brooklyn College	N.Y.
Kneipple, John M. A.B. 1959, Yale University	Md.	Krisher, Ralph E., Jr. B.S. 1962, University of Cincinnati	Ohio
Knoll, Emil J. B.S. 1961, University of Nebraska LL.B. 1964, Georgetown University	Nebr.	Kubinski, Charles A. B.B.A. 1960, St. John's University	Md.
Koffler, Warren W. B.S. 1959, Boston University LL.B. 1962, New York University	Va.	Kuchenberg, Thomas C. B.S. in F.S. 1964, Georgetown University	Wis.
		Krujawa, Warren P. B.S. 1964, College of William and Mary	N.Y.
		Kyle, Richard D. A.B. 1964, College of Idaho	Idaho
<b>L</b>			
Labovitz, Mordecai Z. A.B. 1964, Allegheny College	Pa.	Leppink, James A. B.S. 1957, University of Wyoming	Va.
Laird, Michael H. B.S. in Ch.E. 1962, Texas Technological College	La.	Lerner, Marshall A. B.S. in E.E. 1962, Newark College of Engineering	N.J.
Lambert, David P. B.S. in B.A. 1961, University of Arkansas	Ark.	Lesh, Darwyn H. A.B. 1963, The George Washington University	Va.
Lambie, James T. B.S. 1964, Carson-Newman College	Va.	Leveen, Barry G. A.B. 1964, Rutgers, the State University	N.J.
Landsman, Sheldon I. B.S. in Ch.E. 1964, City College, New York	N.Y.	Levine, Henry J. B.S. 1962, Lehigh University	Pa.
Larson, Lowell A. B.S. in I.E. 1963, Iowa State University of Science and Technology	D.C.	Levy, Michael S. A.B. 1962, University of Vermont	N.Y.
Lasker, Robert J. B.S. in E.E. 1958, University of Connecticut	N.Y.	Light, Ivan I. A.B. 1964, Harpur College	N.Y.
Laskin, Dennis A. A.B. 1964, Ohio State University	W.Va.	Lilly, Donald S. B.S. 1960, University of Kentucky	Va.
Latterman, Mark A. A.B. 1963, Michigan State University of Agriculture and Applied Science	Pa.	Lilly, Nancy M. B.S. in F.S. 1959, Georgetown University	D.C.
Lavanty, Donald F. A.B. 1963, The George Washington University	Md.	Lindquist, William F. A.B. 1961, St. Ambrose College	D.C.
Lawlor, Philip T., Jr. B.C.S. 1963, Seattle University	Md.	Lines, Farrell L. B.S. 1963, Brigham Young University	N.M.
Lawrence, Robert A. B.S. 1962, Columbia University	Va.	Lister, Charles E. A.B. 1960, Harvard University	D.C.
Lawton, Stephan E. A.B. 1964, University of Oklahoma	Okla.	A.B. 1962, B.C.L. 1963, University of Oxford, England	
Lee, Robert B. A.B. 1960, LL.B. 1962, University of Minnesota	Minn.	Lister, John D. B.M.E. 1963, Rensselaer Polytechnic Institute	N.J.
Lefcowitz, Martin B.S. 1964, Carnegie Institute of Technology	N.Y.	Lockard, Sam P. A.B. 1962, The George Washington University	W.Va.
Lefebvre, Albert C. B.S.L. 1959, Georgetown University	Md.	Loman, Thomas G. A.B. 1962, Pennsylvania State University	N.J.
LeFevre, John F. A.B. 1964, Williams College	Ohio	Long, Roger S. A.B. 1964, Michigan State University of Agriculture and Applied Science	Mich.
Lefkowitz, Michael P. A.B. 1964, Tufts University	Mass.	Long, Stuart J. A.B. 1964, College of the Holy Cross	D.C.
Leftwich, Willie L. B.S. in E.E. 1960, Howard University	D.C.	Lotis, Jon G. B.B.A. 1963, University of Pittsburgh	D.C.
Lehrkind, Harry T. A.B. 1964, Montana State University	Mont.	Lottmann, Robert V. B.S. in M.E. 1962, Purdue University	Md.
Leib, Jeffrey H. A.B. 1964, Brooklyn College	N.Y.	Lovenheim, David A. A.B. 1964, Brown University	N.Y.
Leo, Michael S. A.B. 1965, Brooklyn College	N.Y.	Lupo, Raphael V. B.E.E. 1963, The George Washington University	Va.
Leonard, John W. A.B. 1964, Cornell University	N.Y.	Lynn, John B. B.S. 1957, U. S. Coast Guard Academy	Conn.
Leonard, William C. A.B. 1964, Morehouse College	D.C.	Lynn, Theodore S. A.B. 1958, Columbia University	N.Y.
Leong, Denis C. H. B.S. 1963, Oregon State University	Hawaii	LL.B. 1961, Harvard University LL.M. 1962, New York University	



## M

MacDonald, John K.	D.C.	Mazur, Arnold S.	D.C.
A.B. 1955, St. Joseph's College		A.B. 1964, State University of New York	
LL.B. 1958, Harvard University		McBride, James L.	Va.
Maebius, Jed B., Jr.	Texas	A.B. 1963, University of Utah	
A.B. 1963, University of Michigan		McCabe, Lucy K.	N.Y.
Magee, Douglas M.	Va.	A.B. 1961, Manhattanville College of the Sacred Heart	
B.S. 1963, University of Southern Mississippi		McCann, James P.	Md.
Maghribi, Mahmood	Libya	B.S. 1960, Pennsylvania State College, Lock Haven	
LL.B. 1958, University of Damascus, Syria		McCarthy, James D., Jr.	D.C.
Magoffin, Edward T., Jr.	Fla.	B.S. 1954, LL.B. 1958, Wayne State University	
B.S. in B.A. 1963, University of Florida		McCarthy, James F.	D.C.
Maloney, Barry C.	N.Y.	A.B. 1956, Boston University	
B.S. in B.A. 1964, Georgetown University		McCaul, Paul F.	N.Y.
Mandry, Paul W.	N.C.	B.E.E. 1962, New York University	
B.S. 1960, U. S. Military Academy		McCollom, William G.	D.C.
Mangano, Philip A.	Md.	A.B. 1958, Harvard University	
A.B. 1932, Yale University		LL.B. 1964, University of Virginia	
A.M. 1934, University of Rochester		McFarland, Wallace B.	Md.
Manion, David R.	D.C.	A.B. 1942, Yale University	
B.B.A. 1964, University of Notre Dame		McGarry, Michael J.	D.C.
Mantel, Richard C.	Md.	A.B. 1964, University of Vermont	
A.B. 1962, University of Maryland		McGee, Hansel L.	D.C.
Marcuccio, Claire E.	Md.	B.S. 1952, City College, New York	
A.B. 1964, University of Maryland		M.S. 1960, Polytechnic Institute of Brooklyn	
Margulies, Philip F.	N.J.	McGee, Margaret L.	Oreg.
B.S. 1962, New York University		A.B. 1964, University of Oregon	
Marjama, Owen D.	Va.	McGiehan, Donn	Va.
B.S. in Met.E. 1958, Michigan College of Mining and Technology		B.S. in M.E. 1953, Duke University	
M.S. in Met.E. 1961, Wayne State University		McGiffert, Carolyn T.	Pa.
Markle, George D.	Va.	A.B. 1962, Wellesley College	
A.B. 1964, Washington and Jefferson College		McGinley, Margaret E.	Md.
Marks, Avrum W.W.	Md.	A.B. 1964, Swarthmore College	
B.S. 1957, University of Virginia		McGraw, Marcus P.	Md.
M.B.A. 1958, University of Pennsylvania		A.B. 1964, University of North Carolina	
Marlowe, Freddie	Texas	McGreal, Michael J.	N.Y.
A.B., B.S. 1961, Agricultural and Mechanical University of Texas		B.S. 1959, Iona College	
Marmura, William H.	D.C.	M.S. 1960, College of the Holy Cross	
B.S. 1959, University of Pittsburgh		McKee, Harry W.	N.D.
Marshall, George A.	Va.	Ph.B. 1963, University of North Dakota	
A.B. 1962, Hamline University		McKenna, John J.	N.J.
Marshall, Thomas J.	Mo.	A.B. 1958, Seton Hall University	
B.S. in B.A. 1964, University of Missouri		LL.B. 1963, Georgetown University	
Martin, Charles E.	Va.	McLoughlin, Samuel A.	Md.
B.S. 1951, U. S. Coast Guard Academy		A.B. 1949, Mexico City College	
J.D. 1958, The George Washington University		McNew, Robert A.	Va.
Martin, Frank E., Jr.	D.C.	B.S. 1961, Louisiana State University	
A.B. in Ed. 1955, The George Washington University		McNulty, Anthony J.	Pa.
Martin, Roy A.	Md.	A.B. 1958, LaSalle College	
A.B. 1960, North Texas State University		McNulty, John F.	Pa.
Mason, William J.	D.C.	B.S. in M.E. 1963, Drexel Institute of Technology	
B.S. 1962, Tennessee Polytechnic Institute		Means, Cecil P.	D.C.
Mathur, Erica L.	Va.	A.B. 1957, University of Nebraska	
A.B. 1954, LL.B. 1957, The George Washington University		Mecham, George M.	Utah
Matthews, Gayle B.	Va.	B.S. 1963, University of Utah	
A.B. 1963, The George Washington University		Mechanic, Samuel R.	Pa.
Matthews, Phoebe N.	D.C.	B.S. 1964, Fairleigh Dickinson University	
A.B. 1960, Wellesley College		Mednick, Allen D.	N.Y.
M.S. in Ed. 1963, University of Pennsylvania		A.B. 1963, City College, New York	
Matyi, Joseph	D.C.	Meer, Eugene H.	N.Y.
A.B. 1959, Washington and Jefferson College		A.B. 1964, St. Lawrence University	
M.P.A. 1960, Syracuse University		Megyeri, Laszlo, Jr.	D.C.
Maxey, Joseph W., Jr.	D.C.	A.B. 1963, The George Washington University	
B.B.A. 1963, University of Oklahoma		Mehley, Richard A.	Pa.
Mayer, Vera M.	D.C.	A.B. 1958, Pennsylvania State University	
A.M. 1953, University of Chicago		LL.B. 1964, Temple University	
		Meirowitz, Richard W.	N.Y.
		A.B. 1964, University of Vermont	
		Menache, Jack	Mexico
		A.B. 1963, University of the Americas	
		Mendelsohn, Martin	N.Y.
		A.B. 1963, Brooklyn College	

Mendelson, Arline	Md.	Morgan, Bruce H.	Md.
A.B. 1956, Barnard College		A.B. 1953, Harvard University	
A.M. 1959, Columbia University		M.S. 1954, California Institute of Technology	
Menocal, Armando M.	Fla.	Morgan, Jerold A.	Va.
A.B. 1963, University of Florida		B.S. 1956, U. S. Military Academy	
Merryman, Joseph B., III	Pa.	M.B.A. 1960, Northwestern University	
B.S. 1962, Pennsylvania State University		Moriarty, William B., II	D.C.
Mess, Irwin H.	D.C.	B.S. 1962, University of Maryland	
A.B. 1958, Clark University		Morris, George D.	Ky.
Metcalf, Corinna L.	D.C.	B.S. in Ch.E. 1961, University of Kentucky	
A.B. 1952, University of California at Berkeley		Morrison, Lawrence A.	Va.
Meth, Martin A.	D.C.	A.B. 1960, The George Washington University	
B.E.E. 1963, City College, New York		Morrison, Robert L.	Md.
Meyer, Allan F.	N.J.	B.S. 1956, Agricultural and Technical College of North Carolina	
A.B. 1964, Syracuse University		Morse, Leslie G.	N.Y.
Meyer, Michael S.	D.C.	A.B. 1964, Barnard College	
A.B. 1964, Brandeis University		Moss, Peter J.	Va.
Meyerholz, John P.	Ind.	A.B. 1962, Gettysburg College	
B.B.S. 1963, M.B.A. 1964, University of Michigan		Moss, Stephen E.	D.C.
Migliore, John J., Jr.	Pa.	B.B.A. 1962, Baldwin-Wallace College	
A.B. 1957, Boston University		Mostow, Kenneth L.	D.C.
M.S. 1959, University of Vermont		A.B. 1963, Oberlin College	
Mikus, Joseph A.	Czechoslovakia	Mott, Samuel E.	Va.
Dr. of Laws 1934, University of Bratislava		B.Ch.E. 1960, Rensselaer Polytechnic Institute	
Miller, Harold O.	Pa.	Mountford, Alexander	D.C.
A.B. 1960, Lebanon Valley College		A.M. 1963, University of Edinburgh, Scotland	
Miller, John M.	D.C.	Moxham, Douglas G.	Mass.
A.B. 1958, Bridgewater College		A.B. 1964, Tufts University	
Miller, Michael J.	W.Va.	Mudd, Richard J.	Md.
A.B. 1962, Marietta College		A.B. 1965, The George Washington University	
Miller, Pat H.	Miss.	Mueller, Martin S.	N.Y.
A.B. 1961, Mississippi State University		A.B. 1963, Brown University	
A.M. 1963, University of North Carolina		Mulligan, John J.	Md.
Miller, Robert C.	N.Y.	A.B. 1953, New York University	
B.M.E. 1963, Clarkson College of Technology		M.D. 1957, State University of New York	
Miller, Thomas W.	Mo.	Mulrooney, John J.	Minn.
B.S. 1962, University of Missouri		B.S. in E.E. 1963, University of Notre Dame	
Mills, Edward C.	N.Y.	Mulvihill, Robert J.	Nebr.
A.B. 1964, The Citadel		LL.B. 1959, B.S. in B.A. 1961, Creighton University	
Miner, Robert N.	Ill.	Murphy, David R.	Md.
B.S. 1963, University of Illinois		B.Ch.E. 1957, Rensselaer Polytechnic Institute	
Modecki, Carl A.	Fla.	Murphy, James R., Jr.	Maine
A.B. 1964, University of Kentucky		A.B. 1963, College of the Holy Cross	
Mockiman, Oeminingsih	Indonesia	Murphy, Joseph P.	Va.
LL.B. 1962, University of Indonesia		A.B. 1949, LL.B. 1950, LL.M. 1952, The George Washington University	
Moffitt, Roy B.	N.C.	Murphy, Wesley P.	D.C.
B. Geol. Eng. 1952, Ceramic Eng. 1957, B.S. in Ch.E. 1962, University of North Carolina		A.B. 1955, Radcliffe College	
Mollozzi, John D.	N.J.	Ph.D. 1959, University of Lyon, France	
A.B. 1963, Jersey City State College		Murphy, William G.	N.Y.
Monzack, Melvyn I.	R.I.	A.B. 1962, University of Florida	
B.S. 1962, University of Rhode Island		Murray, Richard	N.Y.
Moody, Stanley A.	N.Y.	A.B. 1957, Wilkes College	
B.S. 1962, University of Maine		LL.B. 1960, Boston University	
Mooney, Rosemary A.	D.C.	Myers, Michael J.	Ill.
A.B. 1964, Drake University		B.S. 1963, University of Illinois	
Moran, Gerald P.	Md.		
B.S. 1960, Scranton University			
LL.B. 1963, Catholic University of America			
Moran, Joseph E.	Md.		
A.B. 1963, University of Maryland			

# N

Nakagawa, Togo	Va.	Nelson, William W.	Okla.
B.B.A. 1963, University of Hawaii		A.B. 1960, LL.B. 1963, University of Oklahoma	
Nedrich, Thomas R.	Pa.	Nevins, David C.	Minn.
A.B. 1964, Pennsylvania State College, Indiana		A.B. 1962, University of Minnesota	
Neece, Allen W., Jr.	Idaho	Newland, Danny A.	Va.
A.B. 1964, College of Idaho		A.B. 1960, College of William and Mary	
Nelson, Howard T.	Va.	LL.B. 1963, The George Washington University	
A.B. 1963, Brigham Young University			



Ney, Richard J. A.B. 1964, Duke University	D.C.	Norcross, George E. B.S. in F.S. 1961, Georgetown University	D.C.
Nielsen, Robert C. A.B. 1962, Trinity College	Conn.	Nordale, Mary A. A.B. 1957, Gonzaga University	Alaska
Nielsen, Walter W. B.S. 1964, Ohio State University	Ohio	Noren, Richard C. A.B. 1963, Harvard University	Conn.
Noble, John A.B. 1961, Juniata College	Md.	Norris, Donald F. B.S. 1952, State University of New York Maritime College	N.Y.
Noguchi, George K. A.B. 1961, University of Hawaii	Hawaii	Norris, Norman L. B.S. 1964, Michigan State University of Agriculture and Applied Science	Va.
Nolde, Hans C. A.B. 1959, LL.B. 1962, University of Pennsylvania	D.C.	Nortman, William A.B. 1964, Brooklyn College	N.Y.
Noone, Michael F., Jr. B.S. 1955, LL.B. 1957, LL.M. 1961, Georgetown University	Calif.	Nunley, Spencer J. A.B. 1960, Columbia University J.D. 1963, Indiana University	Ind.

## O

Oblon, Norman F. B.S. in Ch.E. 1964, Drexel Institute of Technology	Pa.	Olds, James E. B.S. in M.E. 1960, University of North Dakota	Va.
O'Brien, Frederick J. A.B. 1964, University of Hawaii	Hawaii	O'Leary, Barbara A. A.B. 1962, Pembroke College	D.C.
O'Brien, John P. B.S. in E.E. 1959, Purdue University	Ind.	Oliver, Robert S. A.B. 1960, Texas Christian University	Md.
Ockey, Ronald J. A.B. 1959, University of Utah	Wyo.	Olmstead, Brian M. B.S. 1961, St. Peters College LL.B. 1964, Cornell University	N.Y.
O'Connell, Daniel M., Jr. A.B. 1964, University of Virginia	N.Y.	Olsen, James D. B.S. 1960, University of Oklahoma	Va.
O'Connor, Edward D. B.S. in M.E. 1961, University of Notre Dame	Ohio	Olson, Douglas E. B.S. 1959, M.S. 1960, University of Wisconsin	Ohio
Oden, Walter M. B.S. 1949, LL.B. 1951, College of William and Mary	Va.	Olson, Douglas K. A.B. 1964, University of Maryland	D.C.
Ogden, Terry L. A.B. 1964, Syracuse University	N.Y.	O'Neill, James G. B.S. in M.E. 1960, Northeastern University	Va.
Oggel, Stephen P. A.B. 1964, Vanderbilt University	Ill.	Orman, John B.S. in I.E. 1963, University of Florida	Fla.
Ohlhausen, William G. B.S. 1962, St. Louis University	Mo.	Ortiz, Gandarilia E. M.C.L. 1964, Southern Methodist University	Bolivia

## P

Pachter, John S. A.B. 1963, Tulane University	Miss.	Perkins, Robert S. A.B. 1960, University of Florida	Va.
Palleen, Charles M., Jr. A.B. 1959, Doane College LL.B. 1962, University of Nebraska	Va.	Perko, Robert R. B.S. 1960, Georgetown University J.D. 1961, The George Washington University	Va.
Palmer, Ada M. A.B. 1962, The George Washington University	Kans.	Perlow, Barry A. B.S. 1963, Pennsylvania State University	N.J.
Palmer, Mark L. A.B. 1964, Brooklyn College	N.Y.	Perry, James P. B.S. 1964, The Citadel	Va.
Pansic, Andrew, Jr. B.S. 1963, Northwestern University	D.C.	Persinger, Daniel W. A.B. 1963, The George Washington University	D.C.
Parkinson, John T. A.B. 1964, Ohio Northern University	D.C.	Peters, Robert Y. B.E.E. 1957, University of Detroit LL.B. 1960, Georgetown University	Md.
Pascal, Lawrence J. A.B. 1964, St. Anselm's College	N.Y.	Peterson, David A. A.B. 1964, Occidental College	Calif.
Pascal, Paul L. A.B. 1961, University of Maryland	Md.	Peterson, Neil R. A.B. 1960, LL.B. 1963, Georgetown University	Va.
Patsy, Samuel M. B.S. 1959, St. Vincent College	D.C.	Petilon, Jean C. A.B. 1964, Pennsylvania State University	N.Y.
Payden, Michael C. B.S. in M.E. 1962, University of Missouri	Mo.	Petty, Charles W., Jr. B.S. 1960, Wheaton College LL.B. 1963, Duke University	N.C.
Peden, Mark S. A.B. 1964, Indiana University	Ind.	Pevens, Marc W. B.S. 1961, University of Pennsylvania LL.B. 1964, University of Virginia	Ohio
Pell, Anthony D. A.B. 1960, Princeton University	D.C.	Pflager, Richard C. A.B. 1960, Lawrence College	Va.
Pell, Richard W. A.B. 1963, DePauw University	Del.		
Penrod, James N. B.S. 1964, U. S. Naval Academy	Vt.		
Perazich, John G. A.B. 1963, Oberlin College	D.C.		



Phelps, Edwin L. B.S. 1962, Illinois Wesleyan University	Va.	Ponce-de-Leon, Humbert D. A.B. 1935, LL.B. 1937, University of Puerto Rico	D.C.
Phillips, James H. B.S. in E.E. 1960, Rose Polytechnic Institute	Va.	A.M. 1938, Tulane University	N.D.
Pilson, Allan S. A.B. 1963, American University	N.Y.	Porter, Paul W. Ph.B. 1963, University of North Dakota	Va.
Pitchenik, David E. B.E.E. 1962, University of Virginia	N.Y.	Potter, Alan L. B.S. 1951, Virginia Polytechnic Institute	Mich.
Pittler, Leslie M. B.S. 1961, LL.B. 1964, University of Maryland	Md.	Power, John W. B.S. 1963, Arizona State University	Md.
Pittman, Robert J. A.B. 1950, The George Washington University	D.C.	Powers, Thomas P. A.B. 1959, University of Buffalo	D.C.
Pitta, James H. B.S. 1958, University of Maryland	D.C.	Preas, Morton H. A.B. in Govt. 1962, The George Washington University	Ohio
Plant, Lawrence B. B.Ch.E. 1960, University of Detroit	Va.	Preston, John E. A.B. 1962, Ohio University	England
Planty, Mary A. A.B. 1964, Smith College	D.C.	Pretty, Laurence H. B.S. 1965, University of London, England	Pa.
Polaha, Jerome M. A.B. 1964, University of Nevada	Va.	Price, Clifford B., Jr. B.S. 1957, Drexel Institute of Technology	Ind.
Polking, Joseph C. A.B. 1961, University of Notre Dame LL.B. 1964, Catholic University of America	Iowa	Prince, Marion R. B.S. 1963, University of Illinois	Pa.
Polyzoides, Alexandra P. A.B. 1964, Bryn Mawr College	D.C.	Prokop, John A., Jr. A.B. 1961, The George Washington University	Texas

## Q

Quillian, Harry W. A.B. 1960, Dartmouth College	S.C.
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## R

Rabben, Robert G. A.B. 1961, Temple University	Va.	Renjilian, James B. Mgt. Eng. 1959, Rensselaer Polytechnic Institute	N.Y.
Radford, Joseph F., Jr. A.B. 1963, University of Notre Dame	Pa.	Rensin, Howard M. A.B. 1964, Syracuse University	Md.
Radue, David G. A.B. 1959, Colgate University	D.C.	Reah, Ronald E. B.S. 1960, Pennsylvania State University	Pa.
Railton, William S. B.S. in E.E. 1962, University of Washington	N.J.	Reynolds, Clayton E. B.S. 1956, M.S. 1959, University of Houston	Va.
Rajoppi, Carol L. A.B. 1963, Northeastern University	N.J.	Rhodes, Charles R. B.S. 1960, North Carolina State College of Agriculture and Engineering	Md.
Ramey, Carl R. A.B. 1962, Marietta College	Md.	Rice, Janet E. A.B. 1964, Wheaton College	Va.
Ranni, Albert M. A.B. 1964, State University of New York	N.Y.	Rice, Vernon R. B.S. 1963, Utah State University of Agriculture and Applied Science	Va.
Rappaport, Irving S. B.S. in E.E. 1962, Washington University	Ark.	Richards, Alan K. A.B. 1962, University of Maryland	D.C.
Ratzlaff, James W. B.S. 1958, University of Kansas	Va.	Richards, Robert N. B.S. 1951, Brigham Young University	N.M.
Rayman, Arthur A.B. 1963, Brooklyn College	N.Y.	Richardson, Robert J. B.S. 1963, Wisconsin State College	D.C.
Raymond, Robert C. A.B. 1962, University of Washington	D.C.	Ridlen, Julian L. A.B. 1964, Anderson College	Md.
Reale, Ulrico LL.B. 1963, John Marshall Law School	Italy	Riess, Gerald B. A.B. 1962, Whitman College	Wash.
Reese, John H. B.B.A., LL.B. 1954, Southern Methodist University	Texas	Riggs, John T. A.B. 1956, Pennsylvania State University	Pa.
Reiman, Donald G. A.B. 1963, University of Washington	Va.	Ririe, James A. B.S. 1964, Brigham Young University	D.C.
Reisdorf, David L. B.S. Mgt. Eng. 1962, Case Institute of Technology	Ohio	Roach, Robert H. A.B. 1964, University of Kentucky	Ky.
Reising, Gregory S. A.B. 1964, Indiana University	D.C.	Roadman, Robert D. A.B. 1961, Yale University	Pa.
Reiter, Neil S. A.B. 1964, Brooklyn College	N.Y.	Robb, John D. A.B. 1964, University of Nevada	Nev.
Reitman, Edwin H. B.S. 1964, University of Pennsylvania	Md.		

Roberts, David P. B.S. 1959, Washington State University	Calif.	Rosenbaum, James D. A.B. 1964, American University	Md.
Roberts, Neil E. B.S. in E.E. 1964, University of Maryland	Md.	Rosenbaum, Paul A. B.S. 1964, Springfield College	N.Y.
Roberts, Robert E. A.B. 1964, University of Alabama	Ala.	Rosendorf, Donald F. A.B. 1964, The George Washington University	D.C.
Robertson, James A.B. 1959, Princeton University	Ohio	Rosenkrantz, Rita R. B.S. in B.A. 1954, Ohio State University	Md.
Robertson, John O. A.B. 1963, Brown University	Mo.	Ross, Jacob J. A.B. 1961, St. Vincent College	Va.
Robinson, Arnold J. A.B. 1964, University of Vermont	Md.	LL.B. 1964, West Virginia University	N.Y.
Robinson, Donald C. A.B. 1963, Montana State University	D.C.	Ross, Steven L. A.B. 1964, Johns Hopkins University	Md.
Rockey, Keith V. B.S. in Ch.E. 1963, Purdue University	Ill.	Ross, Stuart P. A.B. 1963, The George Washington University	N.Y.
Rockman, Andrew M. A.B. 1964, Rutgers, the State University	N.J.	Rotella, Robert F. B.E.E. 1962, New York University	N.Y.
Rodbell, Stanley F. B.B.A. 1962, University of Michigan	D.C.	Rothberg, Harvey J. B.S. in B.A. 1961, University of Buffalo	N.Y.
Rocessler, Ronald J. B.S. 1961, University of Miami	Wis.	LL.B. 1964, The George Washington University	Mo.
LL.B. 1964, University of Wisconsin	Md.	Rottman, Robert J. LL.B. 1951, St. Louis University	Nebr.
Rome, Arnold I. A.B. 1964, University of Maryland	Va.	Routh, Robert J. A.B. 1963, Nebraska Wesleyan University	D.C.
Romeo, Peter J. B.S. in B.A. 1964, Georgetown University	Md.	Rowe, Donald A. B.S. in C.E. 1960, University of Wisconsin	Idaho
Romig, Michael J. A.B. 1964, The George Washington University	Utah	Rowe, John R. A.B. 1964, University of Idaho	D.C.
Romney, Keith, Jr. A.B. 1964, Brigham Young University	Pa.	Rubin, Gordon H. A.B. 1962, University of California at Berkeley	Oreg.
Rosen, Harold I. B.B.A. 1964, The George Washington University	N.Y.	Rubstein, Peter A. A.B. 1961, Reed College	Ohio
Rosen, Harvey H. A.B. 1962, City College, New York	N.Y.	Ruck, Frederic L. B.S. 1963, University of Cincinnati	Md.
Rosen, Mark L. A.B. 1963, University of Vermont	N.Y.	Ruckel, Horace A. A.B. 1963, University of Colorado	N.Y.
Rosen, Matthew J. A.B. 1963, University of Pennsylvania	Conn.	Ruderman, Jerold R. A.B. 1964, Cornell University	N.Y.
Rosen, Seth D. A.B. 1963, The George Washington University		Rudolph, Michael B.S. 1961, Polytechnic Institute of Brooklyn	

<b>S</b>			
Sachs, Jeremy A.B. 1964, University of Maryland	Md.	Schefflin, Alan W. A.B. 1963, University of Virginia	N.Y.
Safford, Donald S. A.B. 1955, Colgate University	Va.	Scheman, L. R. A.B. 1953, Dartmouth College	N.Y.
LL.B. 1963, The George Washington University		LL.B. 1956, Yale University	Pa.
Sales, Milton S. B.S. in M.E. 1964, Purdue University	Md.	Scherlacher, John P. B.S. in E.E. 1960, West Virginia University	D.C.
Sanders, John F. A.B. 1960, University of Tennessee	Va.	Schmidt, Dana M. B.S.E. 1962, University of Michigan	Calif.
Sandler, Charles E. B.S. 1961, University of Maryland	Md.	Schoch, Christopher R. A.B. 1964, University of San Francisco	Md.
Sandler, Ronald A. B.S. in I.E. 1962, University of Illinois	Ill.	Schooling, Roy L. B.S. 1951, LL.B. 1956, Oklahoma City University	N.Y.
Santial, Leonard J. B.M.E. 1961, Cornell University	Va.	Schramm, William J. B.S. 1963, Fordham University	Va.
Sariisky, Joseph L. A.B. 1958, American University	Va.	Schreiber, Eugene J. B.S. in C.E. 1959, Purdue University	D.C.
LL.B. 1960, Georgetown University		Schreiber, Lenore A.B. 1964, The George Washington University	Va.
Sayko, Andrew F., Jr. B.S. 1963, Providence College	Pa.	Schuenman, Forest R. B.S. 1964, University of Utah	D.C.
Scanlin, William R. A.B. 1962, University of Notre Dame	Mo.	Schultz, James G. A.B. 1958, University of Kansas	N.Y.
Schade, Dewey D. B.J. 1964, University of Missouri	Va.	Schutzman, Charles M. B.Ch.E. 1959, Rensselaer Polytechnic Institute	
Schaut, Donald D. LL.B. 1962, Santa Clara University			



Schwab, Norman K. A.B. 1962, University of Maryland	N.Y.	Siemens, James B. A.B. 1957, St. John's College	D.C.
Schwartz, Stanley D. B.S. 1964, Queens College	N.Y.	Siemer, Deanne C. A.B. 1962, The George Washington University	Va.
Schwartz, Walter L. B.E.E. 1955, Copper Union M.S. 1957, University of California at Los Angeles	N.Y.	Sigmon, Richard R. LL.B. 1957, University of Maryland	Md.
Schwartzberg, Martin C. A.B. 1963, Kansas State Teachers College	N.Y.	Silberman, David A.B. 1963, American University	N.Y.
Schwarz, Carl W. B.C.E. 1958, Cornell University J.D. 1962, The George Washington University	Wis.	Silver, Richard D. A.B. 1964, Boston University	Mass.
Schwieters, John T. A.B. 1962, Georgetown University	Ind.	Silverman, Joel A. B.E. 1965, City College, New York	N.Y.
Schwori, William E. B.S. in B.A. 1964, University of Arizona	Ariz.	Silverstein, Elias B.S. 1963, Rider College	Md.
Scott, Ralph R. A.B. 1964, University of Vermont	N.Y.	Simmons, Albert N. A.B. 1964, The George Washington University	N.Y.
Seanor, John S. A.B. 1962, Mount Union College	Ill.	Simon, Edward N. A.B. 1963, College of William and Mary	Mexico
Searles, Joseph L. A.B. 1963, Kansas State University of Agriculture and Applied Science	D.C.	Sims, Robert B. A.B. 1964, Franklin and Marshall College	N.Y.
Segal, Richard G. B.S. 1963, New York University	N.J.	Singewald, Robert A. A.B. 1964, University of Notre Dame	Conn.
Segata, John J. A.B. 1962, Pennsylvania State University	Pa.	Skinner, John G. A.B. 1964, Georgetown University	D.C.
Seiberg, Jonathan G. A.B. 1964, University of Miami	Mass.	Skolnik, Robert M. B.E.E. 1962, University of Virginia	N.Y.
Seifman, Donald H. A.B. 1964, New York University	N.Y.	Sloan, Leonard A. B.S. 1962, American University	Md.
Seilheimer, Charles H., Jr. A.B. 1963, Middlebury College	N.Y.	Smith, Bruce I. A.B. 1963, Nebraska Wesleyan University	Nebr.
Seitchik, Jay L. B.S. in M.E. 1961, Drexel Institute of Technology	Pa.	Smith, Laura E. A.B. 1964, Brooklyn College	N.Y.
Seitter, Robert P. B.S. 1964, Drexel Institute of Technology	Va.	Smith, Margery W. A.B. 1964, Smith College	N.Y.
Selby, David L. A.B. 1961, Carson-Newman College	Tenn.	Smith, Philip N., Jr. B.S. 1964, University of Maryland	Md.
Selman, Hulen R. A.B. 1964, University of Maryland	Md.	Smith, Raoul P. B.S. 1957, Florida State University	Utah
Semons, William A. A.B. 1962, Ohio State University	Ohio	Smith, Robert C. A.B. 1964, Cornell University	D.C.
Sert, Louis R. B.S. 1949, University of Pittsburgh M.S. Ohio State University	Va.	Snow, John W. A.B. 1962, University of Toledo	D.C.
Shadwick, Gerald L. B.S. 1954, Kansas State University of Agriculture and Applied Science	Va.	Somers, Edward W. B.E. 1953, M.S. 1955, Johns Hopkins University	Md.
Shaner, Daniel H. A.B. 1962, Hampden-Sidney College	D.C.	Sparks, Kenneth R. B.S. 1956, M.S. 1961, Ph.D. 1964, Syracuse University	N.Y.
Shapiro, Robert P. B.S. 1964, New York University	N.J.	Spivak, Marvin J. B.S. in E.E. 1964, The George Washington University	D.C.
Sharkey, Phoebe D. A.B. 1962, Duke University M.S. 1964, Georgetown University	D.C.	Spooner, Richard H. A.B. 1949, Syracuse University	Va.
Sheehan, Richard H., Jr. A.B. 1964, The George Washington University	Va.	Spowart, David J., Jr. LL.B. 1951, Willamette University	Va.
Sheffield, Bryan W. B.E.E. 1963, New York University	N.Y.	Spowart, David J., Jr. B.S. 1949, University of San Francisco	
Shiffman, Sevah R. A.B. 1963, The George Washington University	Md.	B.S. 1961, U.S. Naval Postgraduate School	Ohio
Shubert, Roland H. B.S. in P.E. 1958, Colorado School of Mines	Va.	Spragens, Jeffrey G. A.B. 1964, University of Cincinnati	Okla.
Shuler, Willis P. B.S. in E.E. and A.B. 1962, Rutgers, the State University	D.C.	Spurgeon, Johnny M. B.S. 1959, University of Oklahoma	N.Y.
Sielaty, Robert M. A.B. 1963, Ohio State University	Ohio	Stanton, Roy H. A.B. 1963, University of Vermont	Ark.
		Stapp, Richard L. A.B. 1962, American University at Beirut	Pa.
		Stark, Stephen S. A.B. 1964, University of Denver	Va.
		Starnes, Harlia D. B.S. 1959, East Tennessee State College	



Stefonich, Lucille M. A.B. 1964, Pennsylvania State University	Pa.	Stone, Robert C. A.B. 1964, American University	Fla.
Stein, Adam A.B. 1964, New York University	N.Y.	Stone, Ronald M. B.B.A. 1964, University of Massachusetts	Mass.
Stein, John H. A.B. 1964, Yale University	N.J.	Storm, Mary E. A.B. 1962, Hood College	Md.
Steinberger, John G. B.S.S. 1963, Fairfield University	Conn.	Strecker, Gerard R. B.S. in E.E. 1961, Drexel Institute of Technology	Va.
Stephens, Albert H. B.S. 1959, Florida State University	Fla.	Suchanek, Leonard B.S. 1958, LL.B. 1962, Creighton University	Nebr.
Stevens, Barton K. A.B. 1964, University of Colorado	N.Y.	Suttter, Francis H. B.S. 1964, University of Utah	Idaho
Stevenson, David G. A.B. 1961, Dickinson College	N.J.	Sullivan, James A. A.B. 1964, West Virginia University	Md.
Stewart, George C., III A.B. 1963, University of Washington	D.C.	Swanson, Terrance E. A.B. 1962, Coe College	Iowa
Stewart, Ray D. A.B. 1963, Pomona College	Calif.	Sweeney, Walter H. A.B. 1960, American University	N.Y.
Stewart, Robert C. A.B. 1961, University of Maryland	Md.	Swenson, Eric J. A.B. 1964, Stanford University	Nebr.
Stewart, Walter H. A.B. 1961, DePauw University	Ill.	B.S. in Phar. 1961, The George Washington University	
Steyermark, Paul R. Ph.D. 1955, University of Montreal	Md.		
Stinger, Kenneth F. A.B. 1963, Rutgers, the State University	D.C.		

# T

Tabac, William L. A.B. 1962, Western Reserve University	Ohio	Thomson, Frank H. B.S. 1962, Clarkson College of Technology	N.Y.
Tadlock, Frank H. A.B. 1959, Furman University	D.C.	Thomson, James M. B.S. in E.E. 1960, University of Idaho	Colo.
Taffet, Hans A.B. 1949, LL.B. 1957, The George Washington University	D.C.	Tieszen, Bob C. A.B. 1964, University of Kansas	Kans.
Talisan, Mark E. A.B. 1963, Harvard University	D.C.	Tingey, Don C. B.S. 1962, University of Utah	Utah
Tamburro, David A. B.S. 1961, Lafayette College	N.J.	Tobin, William K. A.B. 1960, Yale University	N.H.
Tansey, John T. A.B. 1962, University of Cincinnati	Ohio	Todd, Harry F. B.S. 1962, Louisiana State University	La.
Tate, George W. A.B. 1960, University of Southern Mississippi	Miss.	Todd, Oliver E., Jr. B.S.E. 1963, University of Michigan	Ohio
Taylor, Clifford W. A.B. 1964, University of Michigan	Mich.	Tomasu, Bert M. Ed.B. 1961, University of Hawaii	Hawaii
Taylor, Douglas R. A.B. 1963, University of Maryland	Md.	Townsend, William C. B.S. in Met.E. 1958, University of Pittsburgh	Va.
Taylor, Jean G. A.B. 1949, Sweet Briar College	D.C.	Tracy, Philip R., Jr. A.B. 1963, University of Nebraska	Nebr.
A.M. 1951, Cornell University		Trepp, Robert M. B.S.E. 1961, University of Michigan	Md.
Taylor, Larry J. B.S. 1956, University of Utah	Va.	Tripp, Thomas N. A.B. 1964, Michigan State University of Agriculture and Applied Science	Ill.
Taylor, Robert J. B.B.A. 1964, Texas Christian University	Texas	Trojnar, Edward J. B.S. 1962, University of Rochester	D.C.
Taylor, Thomas H. B.S. 1940, U.S. Naval Academy	Ohio	Tuggle, Kenneth J. A.B. 1962, Yale University	Md.
LL.B. 1949, The George Washington University		Tupling, Edward W. A.B. 1963, The George Washington University	D.C.
Teasley, John W. A.B. 1941, The Citadel	Ga.	Turner, Joseph M. A.B. 1940, Whitman College	Wash.
LL.B. 1949, Emory University		J.D. 1954, The George Washington University	
Tendler, Robert K. A.B. 1964, Amherst College	D.C.	Turner, Thomas A., Jr. B.B.E. 1964, Georgia Institute of Technology	Ga.
Tennant, Charles J. B.S. in B.A. 1964, American University	D.C.	Turpen, Donald C. B.S. 1959, University of New Mexico	Fla.
Terry, Gary A. A.B. 1964, University of California	Utah	J.D. 1963, The George Washington University	
Thall, Peter M. A.B. 1964, Columbia University	Conn.	Twell, Thomas M. B.B.A. 1964, Marshall University	Va.
Theis, Stuart H. A.B. 1964, Rutgers, the State University	N.Y.	Tyler, Timothy A.B. 1963, Harvard University	Conn.
Thiel, Dale H. B.S.E. (M.E.) 1958, M.S.E. 1960, University of Michigan	Ohio		
Thompson, Virgil D. B.S. 1962, University of Kansas	Kans.		

# U

Urbany, Francis S. A.B. 1955, Harvard University	Va.	Uthus, Don C. A.B. 1963, The George Washington University	Va.
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# V

Valanzano, Anthony A.B. 1964, Purdue University	N.J.	Vital, Jack H., III B.B.A. 1961, Marshall University	Va.
Valianos, Chris J. B.S. 1959, Cornell University	N.Y.	Voet, Martin A.	Texas
Vetter, Bernard K. A.B. 1962, LL.B. 1964, Louisiana State University	La.	Voight, Jerry D. B.S. in Ch.E. 1959, Montana State College	Utah
Visser, Robert P. B.S. 1963, City College, New York	N.Y.		

# W

Wagner, Donald F. A.B. 1962, Ohio Wesleyan University	Va.	Welther, Frederick L. A.B. 1960, Duke University	Ky.
Wagshal, Marc R. B.B.A. 1964, The George Washington University	D.C.	Wenglowkyj, Bohdan A.B. in Govt. 1964, The George Washington University	Va.
Wahrenbrock, Mary E. A.B. 1962, Randolph-Macon Woman's College	Va.	Wertheimer, William L. A.B. 1964, Lafayette College	N.J.
Walch, Victor L. B.S. 1960, University of Utah	Oreg.	Westerman, Arnold R. A.B. 1962, University of Maryland	Del.
Waldman, Marvin M. A.B. 1962, The George Washington University	Mass.	Westhafer, John A. A.B. 1962, Purdue University	Va.
Walfish, David S. A.B. 1964, University of Michigan	Mich.	Westmoreland, William T. B.S. 1940, LL.B. 1942, Southern Methodist University	Texas
Wallace, Monroe A.B. 1963, Lafayette College	N.Y.	Westney, John L., Jr. A.B. 1964, Trinity College	N.Y.
Wallace, Sidney B.S. 1949, U.S. Coast Guard Academy	Md.	Wexler, Robert E. A.B. 1954, State University of South Dakota	Mo.
Walsh, Charles S. B.S. 1964, University of Maryland	Md.	Wheelus, Judith G. A.B. in Govt. 1961, The George Washington University	D.C.
Walsh, Gerald R. B.S. 1959, University of Scranton	Pa.	Whelehan, David D. B.S. 1964, College of the Holy Cross	N.Y.
Walsh, Jerry A. A.B. 1961, University of Idaho	Va.	Whilden, Stephen H. A.B. 1963, San Francisco State College	Calif.
Walters, Gomer W. B.E. 1960, Yale University	Pa.	Whitcomb, George H. A.B. 1955, University of Maryland	Md.
Ward, John F. B.S. 1964, University of Maryland	Md.	White, John K. LL.B. 1963, University of Pennsylvania	D.C.
Ward, Richard A. A.B. 1962, The George Washington University	Va.	Whitham, Charles L. B.E.E. 1961, The George Washington University	D.C.
Warnecke, Michael O. B.S. in M.E. 1963, Purdue University	Ill.	Widlitz, Lynne J. B.S. 1962, Miami University	Ohio
Warren, Richard D. A.B. 1963, University of the South	Md.	Wiegand, Roger C. A.B. 1963, Harvard University	Pa.
Warshauer, Alan M. A.B. 1963, Brooklyn College	N.Y.	Wilkenfeld, Judith D. A.B. 1964, Pembroke College	Md.
Wearn, James M. A.B. 1964, Washington and Lee University	N.Y.	Wilkins, Stanley O., Jr. A.B. 1963, University of Pennsylvania	N.J.
Weilacher, Robert G. B.S. 1957, Columbia University	Va.	Wille, Paul F. B.S. 1964, LeMoyné College	N.Y.
LL.B. 1961, The George Washington University		Williams, David O. A.B. 1960, Dickinson College	Md.
Weinberg, Arthur V. A.B. 1963, University of Maryland	Md.	A.M. 1962, American University	
Weinberg, Stanley M. B.S. 1964, Drexel Institute of Technology	Pa.	Williams, Donald E. B.Ch.E. 1954, Rensselaer Polytechnic Institute	N.Y.
Weiner, David J. B.S. 1962, University of Rhode Island	Va.	Williams, James M. B.S. 1963, Abilene Christian College	Texas
Weiss, Edwin M. A.B. 1948, Ohio State University	N.Y.	Williams, Jan E. A.B. 1961, Colgate University	D.C.
M.S. 1951, University of Wisconsin		Williams, John C. B.S. 1963, LL.B. 1963, University of Oklahoma	Miss.
Weissglass, Marla A. B.S. 1964, Skidmore College	N.Y.	Williams, Ruland N. B.S. 1963, University of Idaho	Idaho
Welles, Radcliffe C. A.B. 1963, San Diego State College	Calif.		

Williams, Scott A. A.B. 1963, Dickinson College	Pa.	Wolff, Alfred L. A.B. 1960, LL.B. 1962, University of Wisconsin	Va.
Williams, Sidney B., Jr. B.S. in Ch.E. 1961, University of Wisconsin	D.C.	Wolfson, Sheldon A.B. 1964, Hunter College	N.Y.
Wilson, Charles E., Jr. A.B. 1963, Ohio Wesleyan University	Md.	Wood, Basil A., Jr. A.B. 1948, University of North Carolina	Ala.
Wilson, David I. A.B. 1963, Southern Illinois University	Mo.	LL.B. 1952, A.M. in Ed. 1964, The George Washington University	
Windsor, Robert A.B. 1963, University of Maryland	Md.	Woods, Gerald R. B.S. 1963, Iowa State University of Science and Technology	D.C.
Wirtzman, Polly R. A.B. 1963, Sweet Briar College	Pa.	Woods, Michael L. A.B. 1964, Texas Technological College	Texas
Witcover, Henry W. A.B. 1936, Duke University A.M. 1937, The George Washington University	Calif.	Woofter, Roy A. B.S. in Ed. 1961, Ed. M. 1962, University of Nevada	Nev.
LL.B. 1951, Stanford University		Wyman, Charles M. A.B. 1955, The George Washington University	Mass.
Wolf, John F., Jr. A.B. 1964, Georgetown University	Md.		
Wolf, Roger Charles A.B. 1962, Harvard University	Ohio		

## X

Xiarhos, Peter B.S. in E.E. 1962, Northwestern University	Mass.
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## Y

Yarrington, Hugh J. A.B. 1964, Randolph-Macon College	Md.	Young, Donald P. A.B. 1961, University of Maryland	Md.
Yeatman, William P. B.S. 1954, D.C. Teachers College	D.C.	Young, William R. A.B. 1952, Richmond College	Va.
Yochelson, Arnold L. B.S. 1963, Pennsylvania State University	D.C.	Youngquist, Eric V. A.B. 1950, A.M. 1951, University of Michigan	Mich.
Young, Carl J. B.S. 1962, LaSalle College	Md.	Yuen, Jann L. A.B. 1958, University of Hawaii	Hawaii
Young, Charles J. A.B. 1961, Randolph-Macon College	Va.		

## Z

Zeller, Harvey B.E.E. 1963, City College, New York	N.Y.	Zimmerman, Richard A. A.B. 1964, Miami University	Ohio
Zener, Thomas A. A.B. 1963, Oberlin College	Va.	Zimmers, Neal F., Jr. A.B. 1964, Denison University	Ohio
Zimmer, Thomas M. A.B. 1963, University of Illinois	Ill.	Zipperian, Herbert L. A.B. 1957, University of Chicago	Wash.
Zimmerman, Don A. A.B. 1962, Pomona College	D.C.	Zoll, David F. A.B. 1964, Colgate University	Va.



## Summaries of Registration Spring Semester 1965

### GEOGRAPHICAL DISTRIBUTION OF STUDENTS

Alabama	5	New York	106
Alaska	1	North Carolina	6
Arizona	3	North Dakota	5
Arkansas	7	Ohio	39
California	18	Oklahoma	6
Colorado	1	Oregon	6
Connecticut	20	Pennsylvania	58
Delaware	6	Rhode Island	3
District of Columbia	147	South Carolina	4
Florida	13	South Dakota	0
Georgia	5	Tennessee	1
Hawaii	8	Texas	13
Idaho	11	Utah	15
Illinois	17	Vermont	1
Indiana	12	Virginia	145
Iowa	7	Washington	3
Kansas	4	West Virginia	7
Kentucky	3	Wisconsin	5
Louisiana	6	Wyoming	1
Maine	4	Bolivia	1
Maryland	128	Czechoslovakia	1
Massachusetts	19	Egypt	1
Michigan	14	England	1
Minnesota	3	Germany	1
Mississippi	3	Indonesia	2
Missouri	14	Iraq	1
Montana	1	Italy	2
Nebraska	8	Korea	1
Nevada	5	Libya	1
New Hampshire	1	Mexico	1
New Jersey	35	Puerto Rico	3
New Mexico	4		

### GRADUATES OF COLLEGES REGISTERED IN THE LAW SCHOOL OR THE GRADUATE SCHOOL OF PUBLIC LAW

Abilene Christian College	1	Beloit College	1
Alabama, University of	4	Boston College	2
Albright College	1	Boston University	7
Allegheny College	4	Bowling Green State University	2
American International College	2	Brandeis University	1
American University	19	Bratislava, University of	1
American University at Beirut	1	Bridgewater College	1
Americas, University of the	1	Brigham Young University	19
Amherst College	1	Brooklyn College	14
Anderson College	1	Brooklyn, Polytechnic Institute of	4
Antioch College	1	Brown University	5
Arizona State University	2	Bryn Mawr College	2
Arizona, University of	1	Bucknell University	4
Arkansas State College	1	Buffalo, University of	2
Arkansas, University of	4	Cairo University	1
Austin Peay State College	1	California Institute of Technology	1
Baghdad, University of	1	California, University of, Berkeley	5
Baldwin-Wallace College	1	California, University of, Los Angeles	3
Baltimore, University of	1	Cambridge University	1
Barnard College	4		

Carnegie Institute of Technology	2	Harpur College	1
Carson-Newman College	2	Hartford, University of	1
Case Institute of Technology	1	Hartwick College	1
Catholic University of America	4	Harvard University	16
Catholic University of Puerto Rico	1	Haverford College	1
Chicago, University of	4	Hawaii, University of	6
Cincinnati, University of	4	Hofstra College	1
Citadel, The	3	Holy Cross, College of the	8
Claremont Men's College	2	Hood College	1
Clark University	1	Houston, University of	1
Clarkson College of Technology	3	Howard University	3
Clemson University	1	Hunter College	2
Cleveland-Marshall Law School	2	Idaho, College of	4
Coe College	1	Idaho, University of	6
Colgate University	7	Illinois Institute of Technology	2
Cologne, University of	1	Illinois, University of	11
Colorado College	1	Illinois Wesleyan University	1
Colorado School of Mines	1	Indiana University	6
Colorado State University	1	Indonesia, University of	1
Colorado, University of	3	Iona College	1
Columbia University	13	Iowa, State College of	2
Connecticut College	1	Iowa State University of Science and Technology	3
Connecticut, University of	5	Iowa, University of	3
Cooper Union	1	Jersey City State College	1
Cornell University	13	John Marshall Law School	1
Creighton University	3	Johns Hopkins University	6
Damascus, University of	1	Juniata College	1
Dartmouth College	4	Kalamazoo College	1
Dayton, University of	1	Kansas State Teachers College	2
D.C. Teachers College	1	Kansas State University of Agriculture and Applied Science	2
Delaware, University of	6	Kansas, University of	5
Denison University	2	Kentucky, University of	7
Denver, University of	2	Kenyon College	1
DePauw University	2	Lafayette College	6
Detroit, University of	2	LaSalle College	1
Dickinson College	9	Lawrence College	1
Doane College	1	Lebanon Valley College	1
Drake University	2	Lehigh University	3
Drexel Institute of Technology	10	LeMoyne College	1
Duke University	10	Lincoln University	1
Duquesne University	1	London, University of	1
Earlham College	1	Louisiana State University	3
East Tennessee State College	1	Louisville, University of	1
Edinburgh, University of	1	Lyon, University of	1
Elizabethtown College	1	Maine, University of	5
Emory University	3	Manhattanville College of the Sacred Heart	1
Fairfield University	1	Marietta College	1
Fairleigh Dickinson University	2	Marquette University	4
Fisk University	1	Marshall University	2
Florida State University	2	Maryland, University of	51
Florida, University of	8	Massachusetts Institute of Technology	2
Fordham University	4	Massachusetts, University of	3
Franklin and Marshall College	2	McGill University	1
Furman University	1	Mexico City College	1
George Washington University, The	109	Miami University	6
Georgetown University	28	Miami, University of	6
Georgia Institute of Technology	4	Michigan College of Mining and Technology	3
Gettysburg College	2		
Gonzaga University	1		
Grove City College	1		
Hamilton College	1		
Hamline University	1		
Hampden-Sidney College	2		



Michigan State University of Agriculture and Applied Science . . .	7	Pennsylvania State University	24
Michigan, University of . . . . .	18	Pennsylvania, University of	12
Middlebury College . . . . .	1	Phillips University	1
Minnesota, University of . . . . .	6	Pittsburgh, University of . . . . .	8
Mississippi State College for Women .	1	Pomona College	3
Mississippi State University . . . . .	1	Pratt Institute	1
Mississippi, University of . . . . .	1	Princeton University	11
Missouri, University of . . . . .	6	Providence College	2
Montana State College . . . . .	1	Puerto Rico, University of	3
Montana State University . . . . .	2	Purdue University	17
Montreal, University of . . . . .	1	Queens College	1
Morehouse College . . . . .	1	Radcliffe College	1
Morris Harvey College . . . . .	1	Randolph-Macon College	2
Mount Holyoke College . . . . .	1	Randolph-Macon Woman's College	1
Mount Saint Mary's College . . . . .	1	Reed College	3
Mount Union College . . . . .	1	Rensselaer Polytechnic Institute	10
Muskingum College . . . . .	1	Rhode Island, University of	3
Nebraska, University of . . . . .	3	Rice University	1
Nebraska Wesleyan University . . . .	2	Richmond College	2
Nevada, University of . . . . .	6	Richmond, University of	1
Newark College of Engineering . . . .	1	Rider College	1
New Hampshire, University of . . . .	2	Rochester, University of	6
New Mexico Highlands University . .	2	Rollins College	3
New Mexico, University of . . . . .	2	Rose Polytechnic Institute	1
New York, City College of . . . . .	14	Rutgers, the State University	11
New York Maritime College, State University of . . . . .	2	St. Ambrose College	1
New York, State University of . . . .	3	St. Anselm's College	4
New York University . . . . .	16	St. Bernardine of Siena College	1
North Carolina, Agricultural and Technical College of . . . . .	1	St. Bonaventure University	1
North Carolina State College of Agriculture and Engineering	1	Ste. Famille, College de la	1
North Carolina, University of	9	St. John's College	2
North Dakota, University of	6	St. John's University	4
North Texas State University	1	St. Joseph's College	1
Northeastern University	3	St. Lawrence University	2
Northwestern University	8	St. Louis University	2
Notre Dame, University of	12	Ste. Maria, College de la	1
Oberlin College	3	St. Mary's Seminary and University	1
Occidental College	2	St. Peters College	1
Ohio Northern University	2	St. Vincent College	2
Ohio State University	10	San Diego State College	1
Ohio University	3	San Francisco State College	1
Ohio Wesleyan University	5	San Francisco, University of	2
Oklahoma Baptist University	1	San Jose State College	1
Oklahoma City University	1	Santa Clara, University of	2
Oklahoma State University of Agriculture and Applied Science	1	Scranton, University of	5
Oklahoma, University of . . . . .	10	Seattle University	1
Oregon State University	3	Seoul University	1
Oregon, University of	1	Seton Hall University	1
Oxford, University of . . . . .	1	Skidmore College	1
Palermo University	1	Smith College	3
Panjab, University of the . . . . .	1	South Carolina, University of	3
Pembroke College	3	South Dakota, State University of	1
Pennsylvania State College, California	1	South, University of the	2
Pennsylvania State College, Indiana	1	Southeast Missouri State College	1
Pennsylvania State College, Lock Haven . . . . .	2	Southern California, University of	1
		Southern Connecticut State College	1
		Southern Illinois University	1
		Southern Methodist University	3
		Southern Missionary College	1
		Southern Mississippi, University of	2
		Southwestern at Memphis	1
		Springfield College	1



Spring Hill College	1	Vanderbilt University	4
Stanford University	3	Vermont, University of	15
Stevens Institute of Technology	1	Vernon Law School	1
Swarthmore College	1	Virginia Polytechnic Institute	3
Sweet Briar College	2	Virginia, University of	17
Syracuse University	8	Wabash College	1
Temple University	6	Washington and Jefferson College	2
Tennessee Polytechnic Institute	1	Washington and Lee University	6
Tennessee, University of	3	Washington State University	1
Texas Agricultural and Mechanical University	2	Washington University	5
Texas Christian University	2	Washington, University of	8
Texas Technological College	2	Wayne State University	2
Texas, University of	1	Waynesburg College	1
Texas Woman's University	1	Wellesley College	3
Thammasat, University of	1	Wesleyan University	1
Toledo, University of	1	West Virginia University	5
Trinity College	3	Western Reserve University	1
Tufts University	4	Wheaton College	2
Tulane University	4	Whitman College	2
Union College	1	Wilkes College	1
U.S. Coast Guard Academy	8	Williamette University	1
U.S. Merchant Marine Academy	1	William and Mary, College of	9
U.S. Military Academy	4	Williams College	2
U.S. Naval Academy	7	Wisconsin State College	2
U.S. Naval Postgraduate School	1	Wisconsin, University of	9
Utah State University of Agriculture and Applied Science	8	Wyoming, University of	2
Utah, University of	11	Yale University	17
		Yeshiva University	1

#### SUMMARY OF REGISTRATION—SPRING SEMESTER 1965

	Men	Women	Total
First Year	408	41	449
Second Year	342	17	359
Third Year	203	6	209
Candidates for degree of Master of Laws	46	5	51
Candidates for degree of Master of Comparative Law	1	—	1
Candidates for degree of Master of Comparative Law (American Practice)	4	—	4
Candidates for degree of Doctor of Juridical Science	6	—	6
Unclassified	75	6	81
<b>TOTAL</b>	<b>1,085</b>	<b>75</b>	<b>1,160</b>

## COLLEGES AND SCHOOLS—DEGREE PROGRAMS

COLUMBIAN COLLEGE OF ARTS AND SCIENCES: Associate in Arts (A.A.), Associate in Science (A.S.), Bachelor of Arts (A.B.), Bachelor of Science (B.S.), Bachelor of Science in Medical Technology (B.S. in Med. Tech.), Master of Arts (A.M.), Master of Fine Arts (M.F.A.), and Master of Science (M.S.)

GRADUATE COUNCIL: Doctor of Philosophy (Ph.D.)

SCHOOL OF MEDICINE: Doctor of Medicine (M.D.)

NATIONAL LAW CENTER:

LAW SCHOOL: Bachelor of Laws (LL.B.)

GRADUATE SCHOOL OF PUBLIC LAW: Master of Laws (LL.M.), Master of Comparative Law (M.Comp.L.), and Doctor of Juridical Science (S.J.D.)

SCHOOL OF ENGINEERING AND APPLIED SCIENCE: Engineering Technologist Certificate (E.T.C.), Bachelor of Science (B.S.), Master of Science (M.S.), Master of Engineering Administration (M.E.A.), and Doctor of Science (D.Sc.)

SCHOOL OF EDUCATION: Bachelor of Arts in Education (A.B. in Ed.), Bachelor of Science in Physical Education (B.S. in P.E.), Master of Arts in Teaching (A.M. in T.), Master of Arts in Education (A.M. in Ed.), Education Specialist (Ed.S.), and Doctor of Education (Ed.D.)

SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS: Bachelor of Arts in Government (A.B. in Govt.), Bachelor of Business Administration (B.B.A.), Certificate of the Institute for Sino-Soviet Studies (Cert. of I.S.S.S.), Master of Arts in Government (A.M. in Govt.), Master of Business Administration (M.B.A.), Master of Public Administration (M.P.A.), Graduate Certificate in Health Care Administration (Grad. Cert. in H.C.A.), Doctor of Business Administration (D.B.A.), and Doctor of Public Administration (D.P.A.)

COLLEGE OF GENERAL STUDIES: Associate in Arts (A.A.), Associate in Science (A.S.), Associate in Secretarial Administration (A.Sec.Adm.), Bachelor of Arts (A.B.), Bachelor of Business Administration (B.B.A.), Bachelor of Science in Geodetic and Cartographic Science (B.S. in Geod. and Cart. Sc.), Master of Science in Business Administration (M.S. in B.A.), Master of Science in Financial Management (M.S. in Fin. Mgt.), Master of Science in Governmental Administration (M.S. in Govt. Adm.), Master of Science in International Affairs (M.S. in I.A.), Master of Science in Personnel Administration (M.S. in Per. Adm.), and Master of Science in Public Administration (M.S. in P.A.)

## ANNUAL ISSUES OF THE UNIVERSITY BULLETIN

*Requests for the following publications should be addressed as indicated.*

COLLEGE OF GENERAL STUDIES, Dean of the College  
COURSES OF INSTRUCTION (for The Division of University Students  
and continuing degree candidates), Director of Admissions  
STUDENT FINANCIAL AID, Director, Student Financial Aid  
LAW SCHOOL AND GRADUATE SCHOOL OF PUBLIC LAW, Dean of the  
Law School or Dean of the Graduate School of Public Law  
SCHOOL OF ENGINEERING AND APPLIED SCIENCE, Dean of the School  
UNDERGRADUATE AND GRADUATE CATALOGUE (Arts and Sciences, Edu-  
cation, Government and Business, International Affairs), Director  
of Admissions  
SCHOOL OF MEDICINE, Admissions Office, School of Medicine  
SUMMER SESSIONS, Dean of the Summer Sessions  
SCHEDULE OF CLASSES: FALL AND SPRING SEMESTERS, Registrar  
SCHEDULE OF CLASSES: SUMMER SESSIONS, Dean of the Summer Sessions

---

Jessie Bigelow Martin, A.B., *Editor of Academic Publications*



# THE GEORGE WASHINGTON UNIVERSITY

COLUMBIAN COLLEGE OF ARTS AND SCIENCES, 1821

THE GRADUATE COUNCIL, 1893

THE SCHOOL OF MEDICINE, 1825

THE NATIONAL LAW CENTER, 1959

THE LAW SCHOOL, 1865

THE GRADUATE SCHOOL OF PUBLIC LAW, 1959

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE, 1884

THE SCHOOL OF EDUCATION, 1907

THE SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS, 1928

THE COLLEGE OF GENERAL STUDIES, 1950

THE DIVISION OF UNIVERSITY STUDENTS, 1930

THE DIVISION OF AEROSPACE STUDIES, 1951

THE SUMMER SESSIONS, 1916

THE UNIVERSITY HOSPITAL, 1898

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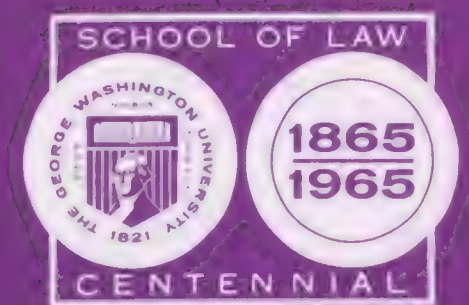
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THE GEORGE WASHINGTON UNIVERSITY BULLETIN

1965-1966

UNDERGRADUATE AND GRADUATE CATALOGUE

Arts and Sciences, Education, Government and Business, International Affairs



APRIL 1965



COVER: *Rembrandt Peale's porthole portrait of George Washington, 1850, from the University's Art Collection.*

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*Volume LXIV, Number 6, April 1965*

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**UNDERGRADUATE AND  
GRADUATE CATALOGUE 1965-1966**

**Arts and Sciences, Education,  
Government and Business, International Affairs**

**WASHINGTON, D.C. 20006**

## CORRESPONDENCE DIRECTORY

Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Director of Admissions, The George Washington University, Washington, D. C. 20006.

Information concerning courses of instruction, programs, and faculties of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on page 360.

<i>General Admission</i>	Director of Admissions, Building C
<i>Law School Admission</i>	Dean of The Law School
<i>School of Medicine Admission</i>	1339 H Street NW.
<i>Aerospace Studies (AFROTC)</i>	Director of Aerospace Studies, Chapin Hall
<i>Alumni Association</i>	Alumni Office, Bacon Hall
<i>Medical Alumni Association</i>	1335 H Street NW.
<i>Foreign Students</i>	Director of Foreign Student Affairs, Building T
<i>Men's housing</i>	Dean of Men
<i>Women's housing</i>	Dean of Women
<i>Scholarships and Loans</i>	Director, Student Financial Aid
<i>Student Employment</i>	Student Placement Office, 2114 G Street NW.
<i>Summer Sessions</i>	Dean of The Summer Sessions
<i>Transcripts of Records</i>	Registrar, Building C
<i>Veterans Education</i>	Director of Veterans Education

### GRADUATE STUDY:

<i>Master's degrees in Arts and Sciences</i>	Dean of Columbian College of Arts and Sciences
<i>Doctor of Philosophy</i>	Dean of The Graduate Council
<i>In Education</i>	Dean of The School of Education
<i>In Engineering or Applied Science</i>	Dean of The School of Engineering and Applied Science
<i>In Law</i>	Dean of The Graduate School of Public Law
<i>In Accounting, Business Administration, Business and Economic Statistics, Economic Policy, Health Care Administration, International Affairs, Personnel Administration, Public Administration, Public Affairs</i>	Dean of The School of Government, Business, and International Affairs



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... in the Nation's Capital—

This undergraduate and graduate catalogue lists the programs, courses, and faculties of Columbian College of Arts and Sciences; the Graduate Council; the School of Education; and the School of Government, Business, and International Affairs.

For information concerning the University's programs and faculties in Engineering and Applied Science, Law, and Medicine, request the appropriate catalogue. See "Annual Issues of the University Bulletin," page 360.



# Fall Semester 1965

## SEPTEMBER

S	M	T	W	T	F	S
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## NOVEMBER

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# Spring Semester 1966

## JANUARY

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## JUNE

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# Summer Semester 1966

## JUNE

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## AUGUST

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## SEPTEMBER

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25	26	27	28	29	30	..

# THE UNIVERSITY CALENDAR

## 1965-1966

### 1965 FALL SEMESTER

- September 8-15* Advising for freshmen *Wednesday-Wednesday*
- September 13* Orientation Assembly required of all new students *Monday*
- September 13* Curriculum Assembly required of all new students *Monday*
- September 13-14* Placement tests *Monday-Tuesday*
- September 13-15* Advising for transfer students and upper classmen *Monday-Wednesday*
- September 15* University Faculty Assembly Meeting *Wednesday*
- September 16-18* Registration: *Thursday-Friday* from 12:00 to 8:00 p.m.;  
*Saturday* from 10:00 a.m. to 1:00 p.m. Application for  
February graduation due as part of registration
- September 20* Classes begin *Monday*
- October 1* Subjects of Master's theses of February candidates due  
*Friday*
- October 2* National Teacher Examinations *Saturday*
- October 21* Board of Trustees Meeting *Thursday*
- November 11* Veterans Day (holiday) *Thursday*
- November 25-27* Thanksgiving recess *Thursday-Saturday*
- December 1* Doctoral dissertations of February candidates due *Wednesday*
- December 4* Graduate Record Examination *Saturday*
- December 11* National Teacher Examinations *Saturday*
- December 20-January 1* Christmas recess *Monday-Saturday*
- January 3* Classes resume *Monday*
- January 3* Master's theses of February candidates due *Monday*
- January 12* Last day of fall-semester classes *Wednesday*
- January 15-22* Examination period *Saturday-Saturday*

## 1966 SPRING SEMESTER

- January 17-26* Advising for freshmen, sophomores, and all new students  
*Monday-Wednesday*
- January 20* Board of Trustees Meeting *Thursday*
- January 24* Placement tests *Monday*
- January 27-29* Registration: *Thursday-Friday* from 12:00 to 8:00 p.m.;  
*Saturday* from 10:00 a.m. to 1:00 p.m. Application for  
June graduation due as part of registration
- January 28* Orientation Assembly required for all new students *Friday*
- January 31* Spring-semester classes begin *Monday*
- February 4* Subjects of Master's theses of June Candidates due *Friday*
- February 8* University Faculty Assembly Meeting *Tuesday*
- February 21* Winter Convocation *Monday*
- February 22* George Washington's Birthday (holiday) *Tuesday*
- March 17* Board of Trustees Meeting *Thursday*
- March 19* National Teacher Examinations *Saturday*
- April 1* Doctoral dissertations of June candidates due *Friday*
- April 2* Graduate Record Examination *Saturday*
- April 4-11* Spring recess *Monday-Monday*
- April 12* Classes resume *Tuesday*
- April 29* Master's theses of June candidates due *Friday*
- May 18* Last day of spring-semester classes *Wednesday*
- May 21-27* Examination period *Saturday-Friday*
- May 30* Memorial Day (holiday) *Monday*
- June 4* Board of Trustees Annual Meeting *Saturday*
- June 5* Baccalaureate Service *Sunday*
- June 5* Commencement *Sunday*

## 1966 SUMMER SESSIONS\*

Registration for the fall semester 1966-67, Thursday through Saturday morning, September 15-17.

\* Dates will be announced in the Calendar of the 1966 Summer Sessions Catalogue published in December 1965.



## THE UNIVERSITY

THE GEORGE WASHINGTON UNIVERSITY had its beginning in 1821 as The Columbian College in the District of Columbia. The name of the institution was changed in 1873 to Columbian University and in 1904 to The George Washington University. The debt of the University to George Washington whose name it bears is an intangible one. *History*

George Washington, as President and as private citizen, had urgently insisted upon the establishment of a National University in the Federal City. There he hoped that, while being instructed in the arts and sciences, students from all parts of the country would acquire the habits of good citizenship, throwing off local prejudices and gaining at first hand a knowledge of the practice, as well as the theory, of republican government. To further the materialization of his hopes, Washington left a bequest of fifty shares of The Potomac Company "towards the endowment of a University to be established within the limits of the District of Columbia, under the auspices of the General Government, if that government should incline to extend a fostering hand towards it." The Congress never extended "a fostering hand." The Potomac Company passed out of existence and Washington's bequest became worthless.

Fully conscious of Washington's hopes, but motivated primarily by a great missionary urge and the need for a learned clergy, a group of dedicated ministers and laymen sponsored a movement for the establishment of a college in the District of Columbia. Inspired largely by the zeal and energy of the Reverend Luther Rice, they raised funds for the purchase of a site and petitioned Congress for a charter. After much delay and amendment, Congress granted a charter which was approved by President Monroe on February 9, 1821. To safeguard the College's nonsectarian character it provided "That persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College, or denied any of the privileges, immunities, or advantages therefore, for or on account of his sentiments in matters of religion."

During the entire time when the institution was known as Columbian College, its activities were centered on College Hill, a tract of forty-six and a half acres between the present Fourteenth and Fifteenth Streets extending north from Florida Avenue to somewhat beyond Columbia Road. The Medical School was located downtown. For the better part of the Columbian University period, the buildings of the University were situated along H Street between Thirteenth and Fifteenth Streets. The Medical School group still remains there.

During the last half century the University's present plant has been developed in that section of the old First Ward familiarly known as "Foggy Bottom," between Nineteenth and Twenty-fourth Streets, south of Pennsylvania Avenue. The area is not without its reminders of historic interest to the University. President Monroe who signed the Charter lived at 2017 Eye Street. The first President of the Board of Trustees, the Reverend Obadiah B. Brown, was for fifty years the pastor of a church at Nineteenth and Eye Streets, and Washington selected Twenty-third and E Streets as the site of the National University he had hoped to see established.

### *Purpose and Objectives*

The purpose of The George Washington University was to realize "the aspirations of Washington, Jefferson, and Madison, for the erection of a university at the seat of the Federal Government." Over the years it has been the aim to develop the University ideal in the Nation's Capital with a view toward meeting the changing needs of society while continuing to pursue the traditional principles of learning and research.

The George Washington University now rededicates itself and all the resources at its command to the pursuit of knowledge and its dissemination.

To this end:

The University recognizes its special opportunities in and obligations to one of the principal capitals of the world. It is a primary objective of the University to utilize its historical, geographical, and functional relationship to the Nation's Capital and the Washington community in continuing the development of a great nationally and internationally oriented university.

The University recognizes the needs of our times and accepts the challenge to develop each student's potential abilities to the fullest extent.

The University is and should remain privately controlled, nonsectarian, and co-educational.

Admission to the University is determined only in terms of the personal character and academic qualifications of the candidates.

A broadly based liberal education is fundamental to the total program of the University.

Expansion of graduate and professional studies and research and the utilization for this purpose of the excellent research facilities and materials available in the Nation's Capital are basic to the continuous development of the University's educational program.

The provision of superior instruction and facilities and the application of high standards of entrance qualifications and academic achievement to all students whether full-time or part-time, on-campus or off-campus, are major missions of the University.

A balanced program of student extra-curricular activities is an integral part of the University program.

The University will continue to strive to meet the evident needs of an enlarging student body while governing the size of enrollment by its capacity to supply adequate staff and facilities for the excellent teaching and research which it espouses.



The George Washington University includes twelve colleges, schools, and divisions, as follows:

*The Colleges,  
Schools,  
and Divisions*

Columbian College of Arts and Sciences, through its lower and upper divisions, offers four-year programs in the arts and sciences leading to the degrees of Bachelor of Arts, Bachelor of Science, and (in cooperation with the Department of Pathology and the University Hospital) Bachelor of Science in Medical Technology. The lower division also provides the first two years of the prelegal and premedical programs; the preprofessional work required for admission to the School of Education and the School of Government, Business, and International Affairs; and two-year terminal curricula in Accounting and Physical Sciences. The curriculum in Accounting leads to the degree of Associate in Arts; the Physical Sciences curriculum leads to the degree of Associate in Science. The graduate division offers programs leading to the degrees of Master of Arts, Master of Science, and Master of Fine Arts.

The Graduate Council offers a program of advanced study and research leading to the degree of Doctor of Philosophy.

The School of Medicine offers work leading to the degree of Doctor of Medicine.

The National Law Center includes the Law School and the Graduate School of Public Law. The Law School offers professional courses leading to the degree of Bachelor of Laws. The Graduate School of Public Law offers programs leading to the degrees of Master of Laws, Master of Comparative Law, and Doctor of Juridical Science.

The School of Engineering and Applied Science offers courses leading to the Engineering Technologist Certificate and the degree of Bachelor of Science in the following areas: Civil Engineering, Communications, Control Systems, Electrical Engineering, Electronics, Energy Conversion, Engineering Science, Machine Computers, Measurement Science, Mechanical Engineering Structures, Theoretical and Applied Mechanics. Graduate programs lead to the degrees of Master of Science, Master of Engineering Administration, and Doctor of Science.

The School of Education offers undergraduate programs leading to the degrees of Bachelor of Arts in Education and Bachelor of Science in Physical Education; graduate studies leading to the degrees of Master of Arts in Education, Education Specialist, and Doctor of Education.

The School of Government, Business, and International Affairs offers work leading to the following degrees: (1) Bachelor of Arts in Government with a major in International Affairs or Public Affairs; (2) Bachelor of Business Administration with a major in Accounting, Business Administration, or Business and Economic Statistics; (3) Certificate of the Institute for Sino-Soviet Studies; (4) Master of Arts in Government with a major field in Public Administration, Public Affairs, International Affairs, Economic Policy, Business and Economic Statistics, or Personnel Administration; (5) Master of Business Administration with a major field in Accounting, Business Administration, Health Care Administration, or Personnel Administration; (6) Master of Public Administration with a major field in Public Administration, Health Care Administration, or Personnel Administration; (7) Graduate Certificate in Health Care Administration (post-Master's Study); (8) Doctor of Business Administration or Doctor of Public Administration.

The College of General Studies supplements the adult education program of the University through campus and off-campus study; conferences, seminars, and special projects; and continuing education and noncredit programs. This College offers programs leading to the degrees of Associate in Arts; Bachelor of Arts; Bachelor of Business Ad-



ministration; Bachelor of Science in Geodetic and Cartographic Science; Bachelor of Science in Secretarial Studies; Master of Science in Business Administration; Master of Science in Financial Management; Master of Science in Governmental Administration; Master of Science in International Affairs; Master of Science in Personnel Administration; and Master of Science in Public Administration. The College of General Studies also offers six terminal curricula—(1) Associate in Arts in the field of Accounting, Legal Secretarial Studies, or Secretarial Studies; (2) Associate in Science in the field of Physical Sciences or Medical Secretarial Studies; (3) Associate in Secretarial Administration.

The Division of University Students makes available courses for students not candidates for degrees in this University.

The Division of Aerospace Studies offers a program of Air Force ROTC training which is integrated with the curricula of the colleges and schools of the University and leads to appointment as a commissioned officer in the United States Air Force Reserve.

The Summer Sessions.

**Joint Graduate Consortium** Five universities in Washington, D. C.—The American University, The Catholic University of America, The George Washington University, Georgetown University, and Howard University—have formed a Consortium through which they are coordinating the use of their respective graduate facilities. As the arrangement develops, the graduate student who is in an approved program leading to a graduate degree in any one of the universities will increasingly have the opportunity to select from the combined offerings of all five universities the particular courses which best meet his needs.

Participation is open to graduate students, full-time or part-time, working toward degrees at the Master's or Doctor's level. Degree programs in the following are presently excluded: Canon Law, Dentistry, Engineering, Law, Medicine, Nursing, Social Work, and Theology. Similarly excluded are special courses, such as private instruction (as in music or art) or tutorial study, courses in preparation for passing the language requirement, and summer school courses.

Graduate students are encouraged to study the announcements of graduate programs of all five universities. In order to participate in the Consortium program the student must obtain the approval of his adviser. *A student may not audit courses in another university, nor take courses at another university that are available at his own.*

Registration forms and instructions are available from the registrar of the student's university. The student registers at his own university for all Consortium courses. He pays only to his own university its charges for graduate study.

Specific inquiries should be addressed to the Registrar.

**Administrative Units** The University maintains the following Administrative Units: Health Services, Veterans Education, the Reading Center, the Speech Clinic, and the Psychological Clinic.

**Research Programs** Research programs sponsored by agencies of the Federal Government and by private foundations and industries are conducted. Cooperation between these programs and the various departments of instruction is as close as the nature and needs of the programs and departments will permit.

**Academic Status** The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary

Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The Law School is a charter member of the Association of American Law Schools and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association. The School of Medicine is a member of the Association of American Medical Colleges and is one of the medical colleges which have been continuously approved by the American Medical Association. Curricula of the School of Engineering and Applied Science in Civil, Electrical, and Mechanical Engineering are accredited by the Engineers' Council for Professional Development. The School of Education is a charter member of the American Association of Colleges for Teacher Education and is accredited by the National Council for Accreditation of Teacher Education. The Department of Chemistry is on the approved list of the American Chemical Society.

The University is in downtown Washington four blocks west of the White House and east of the Potomac River with its extensive parkway. Readily accessible are many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Army, the Department of the Navy, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor, as well as the National Archives, the Capitol, the Library of Congress, the National Academy of Sciences, the Pan American Union, the National Geographic Society, the World Bank, the Brookings Institution, the National Gallery of Art, and the Corcoran Gallery of Art.

#### *Location*

The University is privately endowed and is governed by a self-perpetuating Board of Trustees of which the President of the University is an ex officio member. The members of the Board are named for a period of three years and are divided into three classes. The members of one class are elected at each annual meeting to fill the places of the members whose terms of office expire. Two members of each class are nominated by the Alumni Association.

#### *Government*

The Library collections of The George Washington University are housed in the University Library, the general library of the University; and in the departmental libraries of law, in Stockton Hall, and medicine, in the School of Medicine.

#### *The University Library*

These collections contain approximately 402,400 volumes—305,000 in the University Library, 67,400 in the Law Library, and 30,000 in the Medical Library. Approximately 10,000 volumes a year are added to the Library's resources. Endowments, supplementing the University appropriation, provide books in the fields of American civilization, American literature, foreign service, history, public finance, and the social sciences; and gifts from many sources have enriched the collections. The Libraries currently receive 3,000 periodicals.

In the modern University Library building, erected in 1939, on the first three floors are the delivery hall, card catalogue, reference and main reading rooms, periodical room, and reserve book rooms; on the fourth floor are four seminar rooms. To the original 135,000 volume eight-tier stack of modern steel construction has been added a similar unit of 170,000 volume capacity with 50 study carrels.



The special subject collections in the University Libraries include the internationally known library of the Carnegie Endowment for International Peace, which was assembled during forty years of its activity in Washington, and was purchased by the University in 1950 and has been integrated into the University collection. The collection contains 50,000 bound volumes and 20,000 pamphlets in the fields of international law and relations, history, and economics. Other collections in the Library are the W. Lloyd Wright collection of Washingtoniana, acquired in 1950; the Richard Heinzel Collection of Germanic philology and literature; the Curt Wachsmuth Collection of Greek and Roman literature, archaeology, and history; the Mount Vernon Collection on political history, international law, the social sciences; and the Chauncey Mitchell Depew Public Speaking Collection.

Information concerning the use of the Libraries may be obtained at the Library service desks. A classified list on cards of selected recent acquisitions is available at frequent intervals, in addition to the complete information in the card catalogue. Monthly art exhibits are held on the first and second floors of the University Library during the academic year.

The Library is administered for the curricular, reference, and recreational needs and interests of the students. Instruction in the use of the library is given in the required English courses, and by the reference librarians. The Library endeavors to assist students and all members of the University to use the rich library resources of Washington and the unusual opportunities they offer for extensive research. Interlibrary loan arrangements are maintained with other libraries in the city and in the United States.

The student has access to the Library of Congress, the Public Library of the District of Columbia and its branches, the Library of the Pan American Union, the Library of the Bureau of Railway Economics, the Library of the United States Department of Agriculture, the Library of the United States Office of Education, the National Library of Medicine, the Library of the Smithsonian Institution, and many of the other great special collections of the government departments.

The hours of the University Library and the Law Library are Monday through Friday, 9:00 A.M. to 10:00 P.M.; Saturday, 9:00 A.M. to 5:00 P.M.; Sunday, 2:00 to 10:00 P.M. The Medical Library is open Monday through Friday, 9:00 A.M. to 10:00 P.M.; Saturday, 9:00 A.M. to 5:00 P.M.





## ADMISSION

THE UNIVERSITY ACCEPTS BOTH MEN AND WOMEN. Students are admitted at the beginning of each semester and summer session.

The right is reserved to refuse admission to any student with an academic record which creates doubt of his ability to succeed in college or who, for any other reason, would not be an acceptable student.

### APPLICATION FOR ADMISSION OR READMISSION

Forms for application for admission or readmission are available at and should be returned to the Office of the Director of Admissions, 2029 G Street NW., Washington, D. C. 20006; telephone: FE 8-0250, extension 344. The application for admission to degree candidacy should be accompanied by a \$15 application fee and a recent signed photograph.

Applicants are urged to submit the application form and complete credentials well in advance of the semester for which they seek admission.

*Students from  
U.S. Institutions*

#### SECONDARY SCHOOL STUDENTS

Students wishing to begin college in the fall semester *should* apply during the fall term of the senior high school year, *and* no later than March 1. Students graduating at mid-term wishing to begin college in the spring semester *must* apply no later than December 1. Students wishing to begin college in either the first or second term of the summer session may do so if application and all required credentials are received prior to March 1.

*An applicant from a secondary school must send the high school record form provided by the University to his high school principal, with the request that the completed form be mailed directly to the Office of the Director of Admissions.*

#### TRANSFER, GRADUATE, READMITTED STUDENTS

Undergraduate transfer students from other institutions, applicants for graduate programs, and readmission applicants *must* submit application and required credentials prior to August 1 for the fall semester, December 1 for the spring semester, May 1 for the first summer session, and June 1 for the second summer session.

*An applicant who has attended one or more institutions of higher learning must request each registrar to mail directly to the Office of the Director of Admissions a transcript of his record, even though credits were not earned. If high school units are not shown on the college transcript, the applicant should request his high school to submit a transcript to the Director of Admissions.*

In exceptional circumstances, such as transfer of a family to the Washington area, consideration will be given to applicants who cannot meet the date deadlines above, assuming space is available in the University.

For detailed admissions requirements, see the appropriate college or school in this Catalogue.

Tests required for admission to Columbian College of Arts and Sciences and Educational Testing Service information are described on pages 50-51.

*Students from Foreign Institutions* Application, required records, and scores on the *Test of English as a Foreign Language* (see details below) *must* be received no later than three months before the opening of the semester for which admission is requested.

#### REQUIRED RECORDS

Applicants should request each educational institution previously attended to send directly to the Office of the Director of Admissions official credentials of: subjects studied; grades received; examinations passed; and diplomas, certificates, and degrees received from secondary schools and all colleges and universities attended. Records of required state examinations and certificates are also needed. The records presented become the property of the University and *cannot* be returned. These credentials should be in the language in which the institution maintains its official records. If these records are in a language other than English, the copies sent should be accompanied by an English translation. If it is not possible for the institutions to provide this translation, students will be expected to pay the nominal cost of necessary translation which will be arranged by The George Washington University.

#### LANGUAGE TEST

Students from countries whose official language is not English are required to take the *Test of English as a Foreign Language*. Students are responsible for making arrangements for taking the test and should address inquiries to: TOEFL, Educational Testing Service, Princeton, New Jersey 08540, U.S.A. The completed application form should be returned to the Testing Service and should reach Princeton no later than one month before the date of the test for which application is made. A \$10 test fee, which should be remitted with the application, entitles the student to have his test score sent to three different institutions. Registration for the *Test of English as a Foreign Language* does not constitute application for admission to The George Washington University.

It is recommended that the examination be taken in the fall or winter to qualify for admission at the beginning of the following academic year.

The Bulletin of Information, obtainable without charge, contains descriptions of the test as well as rules regarding application, fees, reports, and the conduct of the test; lists of examination centers; examination dates; and application blank. On the application for the test, the student should specify that the scores be sent to the Director of Admissions, The George Washington University, Washington, D.C. 20006.

If additional tests are prescribed, necessary instructions will be sent to the applicant by the Director of Admissions.

## ADVANCED STANDING

### CREDIT FOR ADVANCED PLACEMENT EXAMINATIONS

Up to 30 semester hours of credit may be granted for college-level courses in an approved secondary school, if substantiated by satisfactory performance in the Advanced Placement Examination. Arrangement for the examination is the responsibility of the applicant and should be made with the College Board Advanced Placement Examinations, Educational Testing Service, 20 Nassau Street, Princeton, N. J. 08540; or Box 1025, Berkeley, Calif. 94704.

The applicant must request the examining service to submit the test papers and scores to the Office of Admissions. Consideration is given to both the quality of performance on the examination and the quality and content of the courses of study completed by the applicant. Credit may be withheld pending satisfactory completion of higher-level courses in the same field.

### CREDIT FROM HIGHER INSTITUTIONS

Advanced standing may be granted for work successfully completed at accredited institutions of higher learning. Credit will be granted for transferred work only when it meets the requirements for the degree sought at this University. It may be allowed provisionally, and it may be withdrawn for subsequent poor work. Work of low pass grade (*D* or the equivalent) will not be considered for transfer.

The student must be in good standing as to scholarship and conduct. He must be eligible to return to the last previously attended institution in the semester for which he seeks admission to this University.

### SERVICE SCHOOL CREDIT

A limited amount of credit earned in service schools since 1941 may be considered for assignment to qualified degree candidates. Veterans should submit to the Director of Admissions photostatic copies of their service school records, indicating courses successfully completed with sufficient identification of the course to locate it in the Guide to Evaluation of Educational Experience in the Armed Forces.

## READMISSION

A student previously registered in the University who was not registered on-campus during the immediately preceding semester (summer session excluded), must apply for readmission in the Office of the Director of Admissions. (See closing dates for application for admission, pages 15, 16.) If he applies as a degree candidate and was previously



registered as a nondegree student, or if he has attended one or more higher institutions during his absence from the University, he must have complete, official transcripts sent to the Office of the Director of Admissions from each institution attended. Applications for readmission are considered on the basis of regulations currently effective.

*Transfer Within  
the University*

For information concerning transfer from one college, school, or division to another within the University, see page 45.

### CLASSIFICATION OF STUDENTS

*Regular Students.*—Regular students are those who have met the entrance requirements for candidacy and are registered for degrees or for approved special programs.

*Special (or probational or provisional) Students.*—Special (or probational or provisional) students are those who are in the process of removing deficiencies in order to qualify as a "Regular Student."

Additional information concerning curricula, courses offered, entrance requirements, or admission procedure may be obtained from the Office of the Director of Admissions, 2029 G Street NW., Washington, D. C. 20006; telephone—FEderal 8-0250, extension 344.



## REGISTRATION

A STUDENT CANNOT REGISTER FOR CLASSES until he has received a letter of admission to the University issued by the Office of the Director of Admissions.

No registration is accepted for less than a semester or one summer session.

A student may not register concurrently in this University and another institution without the prior permission of the dean of the college, school, or division in which he is registered in this University. Registration in more than one college, school, or division of the University requires the written permission of the deans concerned, *prior to registration*. Allowance of credit for work done concurrently at another institution will be at the discretion of the appropriate committee.

### ELIGIBILITY FOR REGISTRATION

Registration for the following categories of campus students is held on the days of registration stated in the University Calendar. No student who is suspended or whose record is not clear for any reason is eligible to register.

*New Student.*—Upon receipt of a letter of admission from the Office of the Director of Admissions, the new student is eligible for registration on the stated days of registration.

*Readmitted Student.*—A student previously registered in the University who was not registered for campus courses during the preceding semester or summer session, must apply for and receive a letter of readmission from the Office of Admissions, before he is eligible for registration. A student registered for the spring semester of 1964-65 need not apply for readmission for the fall semester 1965-66. Such a student is a "Continuing Student."

*Continuing Student.*—The student registered for campus courses in the immediately preceding semester of the academic year is eligible to regis-

ter upon presentation of his student identification card from the previous semester. The student registered for the 1965 Summer Sessions campus courses, and not restricted to summer registration, is eligible for registration for the 1965-66 fall semester upon presentation of his 1965 Summer Sessions student identification card.

#### TIME AND PLACE OF REGISTRATION

Registration is conducted in Building C, 2029 G Street NW., during the following periods: *fall semester*, September 16 and 17, from 12:00 to 8:00 P.M.; September 18, from 10:00 A.M. to 1:00 P.M. *Spring semester*, January 27 and 28, from 12:00 to 8:00 P. M.; January 29, from 10:00 A.M. to 1:00 P.M.

#### REGISTRATION CHANGES AND WITHDRAWALS

For regulations governing changes in registration and withdrawals, see pages 22, 24, 44-45.





FEES AND FINANCIAL REGULATIONS

FEES PAID BY STUDENTS cover only a portion of the cost of the operation of the University. Income from endowment funds, grants, and gifts from alumni and friends of the institution make up the difference. The following fees and financial regulations were adopted for the academic year 1965-66.

Tuition Fees

For undergraduate and Master's study in Columbian College of Arts and Sciences; the School of Education; the School of Government, Business, and International Affairs

Full-time program (12 to 18 hours), each semester*	\$700.00
Part-time program or hours in excess of 18, for each semester hour	46.00

DOCTOR OF PHILOSOPHY†, DOCTOR OF BUSINESS ADMINISTRATION‡, OR DOCTOR OF PUBLIC ADMINISTRATION‡:

For work leading to and including the general examination...	1,350.00
For work leading to and including the final examination....	1,350.00

\* Payment of tuition for a Master's thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. The student must, however, maintain continuous registration (see pages 22, 46) during this period. If the preparation of the thesis extends beyond the two-year period the student must register for the entire 6 hours of thesis again and pay tuition as for a repeated course

† The tuition fee is to be paid at the rate of \$337.50 a semester or in full at the beginning of each stage of the doctoral discipline. No "continuous registration" fee will be charged if a third year is needed for completion of either part of the degree requirements. If still more time is needed, the student must maintain continuous registration and pay the continuous registration fee.

‡ This fee does not cover the cost of courses numbered 1 to 100.

**DOCTOR OF EDUCATION\*:**

For work leading to and including the major field examination	1,687.50
For work leading to and including the final examination.....	1,012.50

**Additional Course Fees**

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are charged by the semester and, unless otherwise indicated, may be defrayed in two payments when the tuition is paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

**Graduation Fees**

Associate in Arts, Associate in Science .....	10.00
Bachelor's, Master's, Education Specialist, Doctor's degrees .....	25.00
Certificate of the Institute for Sino-Soviet Studies, Graduate Certificate in Health Care Administration .....	25.00
Fee for Binding Master's Thesis .....	6.00
Fee for Printing Summary of Doctoral Dissertation .....	85.00

**Residence Hall Fees (see pages 150-51)****Special Fees**

Application fee (degree candidate), nonrefundable .....	15.00
Application for room reservation .....	100.00
Admission tests (when required) .....	6.00-12.00
Graduate Record Examination fee (to cover two examinations), charged each candidate for a Bachelor's degree in Columbian College of Arts and Sciences or the School of Government, Business, and International Affairs. Due and payable on the official days of registration for the final semester of study (excluding summer sessions) .....	10.00
National Teacher Examinations fee, for Bachelor of Arts in Education degree candidates .....	9.00-13.00
Late-registration fee, for failure to register within the designated period .....	5.00
Change fee, for each change in program: dropping or adding a course, changing from one section to another within a course, change of status (from auditor to credit status or vice versa), and change in credit hours for a course .....	2.00
Withdrawal fee, charged in special cases .....	5.00
Service fee, for deferred payment plan (see "Payment of Fees" below) .....	5.00
Reinstatement fee, for reinstatement after financial suspension .....	10.00
Continuous Registration fee, to maintain "continuous registration" status during any semester of absence from the University or after completion of tuition requirements†—due and payable on the official days of registration .....	46.00

\* As long as there is an unpaid balance for the part of the program on which the student is working, he must make at least the minimum tuition payment of \$168.75 at each fall and spring registration (and for any summer session in which he registers for academic work).

If the total fee is paid for the part of the program on which the student is working, he may continue to register, without additional fee, for courses approved by his Master in Research, until the expiration of the time allowed for that part of his program.

† Payment of the continuous registration fee entitles the student who is granted leave of absence to return and continue his work toward a degree under the academic requirements which were in force at the time of his first registration. The continuous registration fee applies toward neither tuition fee nor residence requirements for the degree.

For special physical examination.....	2.00
For each examination to qualify for advanced standing and for each special examination.....	5.00
English test for foreign students (when required).....	5.00
Laboratory checkout fee, for failure to check out of Chemistry laboratory by the date deadline set by the instructor.....	3.00
Transcript fee, for each transcript of record.....	1.00

Registration in the University entitles each student to the following University privileges: (1) the services of the Placement Office; (2) the use of University library; (3) gymnasium privileges; (4) admission to all athletic contests, unless otherwise specified; (5) subscription to the *University Hatchet*, the student newspaper; (6) admission to University debates; (7) medical attention and hospital services as described under Health Services. These privileges terminate and a student is no longer in residence, when he withdraws or is dismissed from the University.

### PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or attend classes until all fees are paid.

Tuition and fees for each semester are due and payable in full at the time of each registration.

However, a student registered for six semester hours or more may sign a contract with the Office of the Cashier at the time of each registration permitting him to pay one-half of the total tuition and fees (except for fees payable in advance) at the time of registration and the remaining half on or before November 3, 1965 (for the fall semester) and March 16, 1966 (for the spring semester). A service fee of \$5 will be charged for the use of this deferred payment plan. The University will not obligate itself to notify the student, in advance, of the payment-due date for the second half of the semester charges. Students who fail to make any payment when due will be automatically suspended and may not attend classes until they have paid all accrued fees and a \$10 reinstatement fee and have been officially reinstated by the Office of the Cashier.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

Because many parents may wish some option in meeting and financing all or part of the cost of a college education, the University offers educational loan plans through the Girard Trust Exchange Bank in Philadelphia, Pennsylvania; Funds for Education, Inc., Manchester, New Hampshire; and The Riggs National Bank, Washington, D. C.

Although similar in purpose, these plans vary somewhat in coverage and conditions. One year and multiple year plans are available. Insurance covering the life and health of the sponsor is provided through these plans.

Individuals over twenty-one years of age who are employed full-time are also eligible to apply. They may sponsor their own contracts, provided they meet the conditions specified by the plan for which they are applying.



Brochures and applications describing these plans are available in the Office of the Vice President and Treasurer.

## WITHDRAWALS AND REFUNDS

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the dean of the college, school, or division in which the student is registered. Notification to an instructor is not an acceptable notice (see "Withdrawal," pages 44 and 45).

In authorized withdrawals and changes in schedule, cancellations of semester tuition charges and fees will be made in accordance with the following schedule:

1. *Complete withdrawal from the University:*

FALL SEMESTER

Withdrawal dated on or before September 24, 1965 . . . . .	90 per cent
Withdrawal dated September 27 to October 8, 1965 . . . . .	75 per cent
Withdrawal dated October 11 to October 22, 1965 . . . . .	50 per cent
Withdrawal dated after October 22, 1965 . . . . .	none

SPRING SEMESTER

Withdrawal dated on or before February 4, 1966 . . . . .	90 per cent
Withdrawal dated February 7 to February 18, 1966 . . . . .	75 per cent
Withdrawal dated February 21 to March 4, 1966 . . . . .	50 per cent
Withdrawal dated after March 4, 1966 . . . . .	none

2. *For a change in status from full-time to part-time student or for partial withdrawal by a part-time student, the above schedule applies to the difference in charges between the original program and the adjusted program continuing in effect.*
3. *A student enrolled in a full-time program, who drops or adds a course and continues to be in a full-time program, will have no financial adjustments of tuition made other than those involving course fees.*

In no case will tuition be reduced or refunded because of absence from classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this be credited to another semester.

Students in chemistry who fail to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a \$3 checkout fee. A student who drops a course before the end of the semester must check out of the laboratory at the next regular laboratory period.

Students enrolled in the ROTC who fail to turn in uniforms, equipment, and textbooks, on separation from the Corps, are charged the value of the missing items.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

Students are encouraged to provide their own cash funds until they can make banking arrangements in the community.

## FINANCIAL AID

### For Undergraduate Students

THE GEORGE WASHINGTON UNIVERSITY has a program of financial assistance for undergraduate students (including transfer students) of scholarships, low-interest long-term loans, work scholarships, or any combination of these resources. Financial aid is awarded on the basis of the student's scholastic record, financial need, and qualities of leadership and character. Admission to the University is a prerequisite for consideration.

Renewal of any type of financial aid for succeeding years will depend upon the student's academic record and need. Awards may be altered or withdrawn at any time if the academic record of the student is unsatisfactory.

The University participates in the College Scholarship Service of the College Entrance Examination Board (College Code 5246).

Scholarships are awarded for the academic year. Application must be filed by February 15 preceding the academic year of the award.

Applications and supporting credentials for all other types of financial aid must be filed by February 15 preceding the academic year of the award for the fall semester; by October 31, for the spring semester.

#### Credentials required of all financial aid applicants:

1. *Parents' Confidential Statement* should be filed with the College Scholarship Service, Box 176, Princeton, New Jersey; or Box 1025, Berkeley, California. Forms are available at local secondary schools or upon request to the College Scholarship Service

2. *Application for Financial Aid* forms are available and should be filed in the Office of Student Financial Aid, The George Washington University, Washington, D. C. 20006.

An undergraduate *transfer* student is not eligible for scholarship funds until he has completed one full semester (15 hours) at this University with a minimum average of *B* (3.0). A transfer student is, however, immediately eligible for other types of financial aid.

## SCHOLARSHIPS

Since scholarship assistance is highly competitive, only those applicants with outstanding records will be considered for this type of award. Scholarships are granted in the spring for the following academic year, exclusive of Summer Sessions. Funds may provide full or partial tuition and are divided equally between the fall and spring semesters. Each holder must carry a full schedule of academic work (15 semester hours or, in the professional schools, the full prescribed schedule) and maintain a minimum *B* (3.0) average during the period for which the scholarship is granted. Awards are subject to review each year.

### OPEN TO INCOMING FRESHMEN

The following scholarships are awarded to outstanding members of recent graduating classes of accredited secondary schools. Applicants must be citizens of the United States at the time of registration. Only those candidates with outstanding records and superior College Board scores will be considered for this type of award.

*Alumni Scholarships.* See The George Washington University Board of Trustees Scholarships, below.

*Debate Scholarships.* See The George Washington University Board of Trustees Scholarships, below.

*Estella Constance Drane Scholarship (1957).* By bequest, in memory of the boys of the former Washington Business High School who served in World War I. Provides an annual partial scholarship to a graduate of Roosevelt High School.

*General Motors College Scholarship (1955).* Awarded to an incoming freshman with outstanding talent, high personal qualifications, and financial need. The amount is flexible depending upon the need of the individual. It is renewable for the four years of undergraduate work provided the student continues to meet the high standards established for the holder of this award.

*The George Washington University Board of Trustees Scholarships.* Full- and partial-tuition scholarships, which will begin in the fall semester and extend for four successive academic years, provided the holder maintains a *B* average, as well as a high standard of deportment, and continues to be in financial need. Candidates must plan to select a curriculum leading to a Bachelor's degree in any school of the University, except the Law School or the College of General Studies. Students who have demonstrated outstanding ability in interscholastic



speech and debate activities are eligible for the Board of Trustees Scholarships in Debate.

*Amos Kendall Scholarship (1869)*. Tuition aid for an incoming freshman.

*Levin M. Powell Scholarships (1886)*. Full-tuition scholarships, established by bequest, are available annually to young men wishing to prepare for entrance into the United States Naval Academy.

*Julian Singman Art Scholarship (1963)*. A partial scholarship for a freshman student who plans to major in Art. The award will be granted upon completion of one semester's work at this University. Direct inquiries to the Chairman of the Department of Art.

*Abigail Ann Brown and Henry Kirk White Scholarship Fund (1963)*. Established by Emilie Margaret White in memory of her parents. "The Donor of the Scholarship, Emilie Margaret White, former Supervising Director of Foreign Languages, Public Schools of the District of Columbia, requests that graduates of Washington, D. C., public high schools be given preference for these awards."

#### **OPEN TO STUDENTS WITH ESTABLISHED ACADEMIC RECORDS AT THIS UNIVERSITY**

Applicants for these scholarships, including transfer students, must have completed one semester of work (15 hours) and maintained a *B* (3.0) average at this University. Deadline for submitting application and supporting credentials is February 15. Awards are effective beginning with the fall semester.

*American Society of Women Accountants Scholarship (1953)*. Established by the District of Columbia Chapter to provide a partial scholarship for a worthy sophomore, junior, senior, or graduate woman majoring in accounting.

*Byron Andrews Scholarship (1920)*. A partial scholarship established by Bell Fisk Andrews in memory of her husband. Available to "ambitious and needy students, who desire to pursue courses in English, Latin, journalism, history, literature, or political science."

*Beta Sigma Phi Scholarship (1962)*. A partial scholarship established by the District of Columbia City Council, available to a full-time woman student enrolled in undergraduate work.

*Henry N. Brawner, Jr., Foundation Scholarship Fund (1963)*. Provides two scholarships covering tuition and fees for junior or senior students. Candidates must be United States citizens in financial need who have "demonstrated high scholastic ability and promise and have clearly defined degree objectives."

*Emma K. Carr Scholarships (1932)*. Fourteen partial scholarships are available to young men for undergraduate and postgraduate work.

*Maria M. Carter Scholarship (1871)*. Provides tuition aid to a young man.

*Colortone Graphic Arts and Publications Scholarship (1961)*. An annual scholarship established by Colortone Press open to a senior student in Journalism planning a career in graphic arts.

*Daughters of the American Revolution Scholarship (1952).* Established by the District of Columbia Chapter, available to junior and senior students, preferably women, who are descendants of patriots of the American Revolution.

*Isaac Davis Scholarship (1869).* Bequest for tuition aid.

*District of Columbia Institute of Public Accountants Scholarship (1964).* A partial tuition scholarship provided for a male student, in his junior or senior year, who is majoring in accounting.

*Robert Farnham Scholarship (1871).* Established by Mrs. Robert Farnham. Tuition aid for a student in Columbian College of Arts and Sciences.

*Esther Brigham Fisher Scholarship (1951).* Bequest for tuition aid.

*Georgetown Business and Professional Woman's Club Scholarship (1958).* A partial scholarship for a woman student in the field of science.

*Mildred Green Memorial Scholarship Fund (1959).* Established by Alpha Theta Chapter of Pi Lambda Theta, provides annual tuition aid for a student in the School of Education, upon the recommendation of the donor.

*Anna Spicker Hampel Scholarship (1949).* Established by Evelyn Hampel Young in memory of her mother, provides tuition aid for a young married woman in the School of Education or Columbian College of Arts and Sciences.

*Elma Lewis Harvey Scholarship (1921).* A partial scholarship established by Emma Elizabeth Harvey in memory of her daughter, for a young woman in Columbian College of Arts and Sciences.

*Hazelton Scholarship (1950).* An annual partial scholarship, by bequest of Lillie S. Hazelton, "for use and assistance of needy and worthy students."

*Jewish War Veterans' Auxiliary Scholarship (1964).* A partial scholarship established by the Washington Ladies Auxiliary No. 58, Jewish War Veterans of the U.S.A., available to the son or daughter of a veteran entering his or her junior or senior year.

*Kappa Alpha Theta Scholarship (1950).* A partial scholarship established by the Washington alumnae for the training of a clinician in speech correction.

*Kappa Kappa Gamma Scholarship (1959).* A partial scholarship established by the Washington alumnae for a student planning to follow the profession of speech correction.

*Eugene and Agnes E. Meyer Scholarships (1952).* A scholarship fund "to assist promising students or applicants in meeting the costs of furthering their education, with preferential consideration to children of persons who are employed in public service, including service in the armed forces or the judiciary."

*A. Morehouse Scholarship (1861).* Tuition aid for an undergraduate "intending to enter the Christian ministry."

*Phi Delta Gamma Scholarship (1956).* An annual partial scholarship established by Beta Chapter for a woman candidate for an advanced degree.

*Lula M. Shepard Scholarships (1946).* By bequest, two partial scholarships for "worthy Protestant students" wishing to enroll in the International Affairs program of the School of Government, Business, and International Affairs.

*David Spencer Scholarship (1918).* A partial scholarship established by Louisa J. Spencer. Available under certain restriction.

*Mary Lowell Stone Scholarship (1893).* A partial scholarship available to a woman student of science in Columbian College of Arts and Sciences.

*Charles Clinton Swisher Scholarships (1941).* Partial scholarships available by bequest of Professor Swisher. Available under certain conditions to students of medieval history.

*Tau Kappa Epsilon Scholarship (1959).* Established by alumni of the Metropolitan Washington, Virginia, and Maryland areas for annual tuition aid to a member of Tau Kappa Epsilon. If there is no eligible member from the fraternity, the award may be made at the discretion of the Scholarship Committee.

*United States Office of Education Traineeships (1964).* Under Public Law 85-926, amended, traineeships are available to students who have completed the junior year and are interested in working with handicapped children. Traineeships include \$1,600, plus tuition and fees for the senior year. Applications are reviewed and awards made early in the spring semester for the following year. Prospective applicants should write directly to Special Education Program, School of Education, The George Washington University, Washington, D. C. 20006.

*University Hospital Scholarships in Medical Technology.* Ten scholarships are available, each to cover the cost of 24 semester hours of the 30 in the last year of the curriculum leading to the degree of Bachelor of Science in Medical Technology. Inquiries should be directed to the Department of Pathology, The George Washington University Hospital.

*William Walker Scholarship (1824).* Annual tuition aid for an undergraduate intending to enter the Christian ministry.

*Abigail Ann Brown and Henry Kirk White Scholarship Fund (1963).* See page 27.

*John Withington Scholarship (1830).* A partial scholarship established by the New York Baptist Theological Seminary.

*Women's Physical Education Alumnae Association Scholarship (1964).* A partial tuition scholarship provided by The George Washington University Association for a woman majoring in Physical Education

*Ellen Woodhull Scholarship (1919).* Tuition aid for a student in Columbian College of Arts and Sciences.



*Zonta Club Scholarship (1950).* An annual partial scholarship for a woman who is a junior, senior, or graduate student with special interest in a professional or business career.

#### COLUMBIAN WOMEN SCHOLARSHIP FUNDS

The Columbian Women Scholarships are awarded to women students on the basis of financial need and scholastic attainment. Candidates must have completed a minimum of 15 hours at this University with a minimum *B* (3.0) average. A letter of application for these scholarships should be addressed to the Chairman, Columbian Women Scholarships, care of the Alumni Office, The George Washington University, Washington, D. C. 20006, not later than May 15 for the fall semester, and January 1 for the spring semester. Scholarship aid is awarded from income of the following endowments:

*Nellie Maynard Knapp Scholarship Fund (1915).* A fund of \$5,000 for tuition aid established in memory of a former president.

*Founders of Columbian Women Scholarship Fund (1920).* A fund of \$5,000 for tuition aid.

*Lillian Young Herron Scholarship Fund (1925).* A fund of \$5,000 for tuition aid, named in 1930 in memory of a former president.

*Elizabeth V. Brown Scholarship Fund (1925).* A memorial fund of \$1,200 for tuition aid, established by the College Women's Club of Washington, D. C., and restricted to the School of Education.

*College Women's Scholarship Fund (1926).* A \$500 gift for tuition aid established by the College Women's Club of Washington, D. C.

*Grace Ross Chamberlin Scholarship Fund (1932).* A fund of \$2,300 for tuition aid in memory of a former president.

*Janet McWilliams Scholarship Fund (1954).* A \$1000 fund for tuition aid, by bequest of a former president.

*Rose Lees Hardy Foundation Scholarship Fund (1957).* A fund of \$2,000 for tuition aid established by an alumna of the University.

*Victoria Briggs Scholarship Fund (1959).* A \$500 fund for tuition aid, by bequest of Victoria Briggs Turner.

*Columbian Women Members' Scholarship Fund (1961).* A \$5,000 fund for a woman student in the University.

*Arline Hughes Dufour Scholarship Fund (1961).* A \$5,000 fund for tuition aid to a woman student.

*Marie-Louise Ralph Turner Scholarship Fund (1963).* A \$1,000 fund for tuition aid established by Dean William L. Turner as a memorial to his wife.

*Dr. Watson W. Eldridge, Jr., and John F. Eldridge Scholarship Fund (1964).* A \$520 fund for tuition aid, the gift of Mrs. Watson W. Eldridge, Jr., in memory of her husband and son.

## LOAN FUNDS

Applicants for a National Defense Student Loan or a United Student Aid loan, must file a *Parents' Confidential Statement* and an *Application for Financial Aid*. Deadline for submitting applications with supporting credentials is February 15 preceding the academic year of the award; October 31 for the spring semester. Forms are available at the Office of Student Financial Aid, or in the case of the Parents' Confidential Statement, through the College Scholarship Service. Admission to the University is a prerequisite for consideration.

**National Defense Student Loan Fund.** This fund is available to full-time graduate or undergraduate students with a "superior academic background" who are in need of financial assistance. An undergraduate student may borrow for college expenses a sum not exceeding \$1,000 a year and, during his entire undergraduate program, a sum not to exceed \$5,000. A graduate or professional student may borrow a maximum of \$2,500 a year. The total loans made to such a student for all years, including any loans made to him as an undergraduate, may not exceed \$10,000.

**United Student Aid Fund.** This fund is available to full-time graduate and undergraduate students who have completed the freshman year and are in need of financial assistance. Undergraduates may borrow up to \$1,000 a year, graduate students may borrow up to \$2,000 a year—up to a combined total of \$4,000.

## WORK SCHOLARSHIPS

In addition to loans and scholarships, the University provides work scholarships for qualified students. Work scholarships consist of part-time employment within the University, and are available only to students who have completed the freshman year.

## STUDENT EMPLOYMENT

The Placement Office maintains a registry of both full-time and part-time positions available in the Washington area for undergraduate and graduate students.

After registration, interested students may apply at the Placement Office, 2114 G St. NW., for interviews and referrals to positions for which they are qualified.



## For Graduate Students

The George Washington University program of financial assistance for graduate students includes: assistantships, fellowships, graduate scholarships, research appointments, and loans. Admission to graduate study is a prerequisite for consideration.

Application and correspondence concerning assistantships, fellowships, or graduate scholarships should be sent directly to the chairman of the department or dean of the school concerned, and addressed to The George Washington University, Washington, D. C. 20006. Unless otherwise specified, application and supporting credentials should be submitted not later than March 1 preceding the period for which the award is made.

### ASSISTANTSHIPS

*Graduate Teaching Assistantships.* Open in various departments of instruction to candidates for the Master's degrees. Each graduate teaching assistant renders a designated unit of service to his major department of instruction, and receives, depending upon his teaching or laboratory assignment, up to \$2,200 on a nine-month basis plus tuition and laboratory fees for the program of studies which the duties of his assistantship permit him to carry. Tuition and laboratory fees may not exceed \$730. Application should be made to the chairman of the department of instruction concerned.

*Resident Assistantships for Graduate Women.* Available to single women enrolled in any field of graduate study. Each assistant receives a stipend of \$450 on a nine-month basis, tuition and laboratory fees (not to exceed \$1,250) for whatever schedule of study her duties permit her to carry, and a furnished shared apartment in a residence hall. Resident assistants serve as advisers to the residence hall governing councils and student committees; work with students to develop programs which extend the academic climate into the residence hall; participate in the general administration of the residence hall.

Application should be submitted to the Office of the Dean of Women no later than April 1.

### FELLOWSHIPS

*American Security and Trust Company Fellowship (1960).* A two-year fellowship of \$2,000 a year is available to a graduate student in business administration or economics in the School of Government, Business, and International Affairs.

*Graduate Teaching Fellowships in Behavioral Science.* For information concerning these fellowships direct inquiries to the Center for the Behavioral Sciences.

*Winfield Scott Blaney Fellowship in International Affairs (1961).* Bequest of Jeannette Blaney Strayer in memory of her father. The income from this fund, up to \$1,200, is used to provide fellowships for gradu-



ate students in a field of international relations, in the School of Government, Business, and International Affairs.

*Gilbert Grosvenor Teaching Fellowship (1961).* Established by the National Geographic Society in honor of Dr. Grosvenor, an Honorary Trustee of the University. Awarded to a doctoral candidate in the field of human geography, with stipend up to \$1,700 and tuition for work leading to and including the General Examination or the Final Examination, as appropriate. Application forms are available in the Department of Geography and Regional Science.

*W. K. Kellogg Foundation Teaching Fellowship (1964).* A limited number of teaching fellowships, available to full-time doctoral candidates who plan to major in Health Care Administration.

*Isabella Osborn King Research Fellowships (1927).* By bequest, fellowships varying in amounts from \$600 to \$3,600 are offered in the biological sciences to foster research for which the libraries and scientific establishments in Washington provide special facilities.

*Robin Miller Research Fellowship (1953).* A \$3,000 fellowship established by bequest of Mrs. Robin Miller for the study of cardiovascular diseases.

*National Aeronautics and Space Administration Predoctoral Fellowships.* Fellowships, including tuition and stipends of from \$2,400 to \$2,800 (on a 12-month basis), depending on the stage of the doctoral study, are available in the fields of the physical sciences, engineering, mathematics, statistics, economics, and business. Application should be made to the Graduate Council prior to March 15, for the following academic year.

*National Science Foundation Cooperative Graduate Fellowships.* Fellowships at \$2,400 for twelve months or \$1,800 for nine months, with tuition waived, are available in the mathematical, physical, medical, biological, and engineering sciences and in certain other fields regarded as employing scientific methods. Application should be made to the Graduate Council not later than November 1 for the following academic year.

*National Science Foundation Summer Fellowships for Graduate Teaching Assistants.* Summer fellowships are available at not less than \$50 or more than \$85 a week for a period of 8 to 12 weeks; tuition is waived. Application should be made to the Graduate Council not later than December 1.

*Thomas Bradford Sanders Fellowships (1928).* Fellowships in departments of science, varying in amounts from \$900 to \$1,500 plus tuition, established by bequest of Addie Sanders in memory of her brother.

*Scottish Rite Fellowships.* The Ancient and Accepted Scottish Rite of Freemasonry, Southern Jurisdiction, U.S.A., offers fellowships each in the amount of \$2,200, to graduates of accredited colleges who wish to enroll in the School of Government, Business, and International Affairs, to train for government leadership—federal, state, or local. The territory includes the Orient of Alabama, Alaska, Arizona, Arkansas, California, Colorado, District of Columbia, Florida, Georgia, Hawaii,

Idaho, Iowa, Kansas, Kentucky, Louisiana, Maryland, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wyoming, Panama, Puerto Rico, and the Bodies of Taiwan, Japan, Okinawa, and Guam.

These fellowships are made possible by annual gifts and are available to residents of the respective states or countries. Application should be made to the Sovereign Grand Inspector General of the Supreme Council, 33°, of the Southern Jurisdiction, U.S.A., of the Orient state or country from which the application is to be made. Direct inquiries to Mr. C. M. Farrington, The George Washington University.

*United States Office of Education Fellowships (1964).* Under Public Law 85-926, amended, fellowships are available to graduate students who are interested in working with handicapped children. Stipends from \$2,000 to \$2,800, plus tuition and other stipulated allowances for dependents are available. Applications are reviewed and awards made early in the spring semester for the following school year. Prospective applicants should write directly to Special Education Program, School of Education, The George Washington University, Washington, D. C. 20006.

*United States Public Health Service Predoctoral Fellowships.* Fellowships, including tuition, fees, and stipends of from \$2,400 to \$2,800 a year (on a 12-month basis), depending on the stage of the doctoral study, are available in the medical sciences; in those areas of the biological, physical, and behavioral sciences related to health; and in the environmental and other health oriented fields. Complete information and application forms are available at the Career Development Review Branch, Division of Research Grants, the National Institutes of Health, Public Health Service, Bethesda, Maryland 20014.

*United States Public Health Service Traineeships.* A limited number of traineeships are available. Preference is given to students who plan to use the training to develop community health programs in the hospital field. Each trainee receives a monthly stipend, plus tuition, and other stipulated allowances. Request for application form and information should be directed to the Coordinator, Programs in Health Care Administration, The George Washington University, Washington, D. C. 20006.

*University Teaching Fellowships.* Assigned for the academic year to the various departments of instruction. The applicant is expected to be a prospective candidate for a Doctoral degree in the general field of his future doctoral study. Each teaching fellow receives an annual stipend (on a nine-month basis) of up to \$2,200 plus tuition and laboratory fees for whatever schedule of study or research his fellowship duties permit him to carry. Tuition and laboratory fees may not exceed \$600. Stipends vary with the work load of the individual teaching fellow. Normally a University teaching fellow renders half-time service in classroom or laboratory assignments to the department of instruction directing his doctoral study. Application should be made to the chairman of the department of instruction concerned.



## GRADUATE SCHOLARSHIPS

*Special Program in Elementary Teacher Education (1963).* A program supported by The Ford Foundation. Limited tuition aid is available. Grants-in-aid, in amounts justified by need, are awarded by the Selective Committee to outstanding graduates of accredited liberal arts colleges for teaching in elementary schools. For details, write to Program Director, Special Program in Elementary Teacher Education, The George Washington University, Washington, D. C. 20006.

*Gamma Phi Beta Sorority Scholarships (1962).* Two scholarships each covering tuition for one 3-semester-hour course in *Education for the Gifted* offered annually to certified teachers when the appropriate course is available. Direct inquiries to the Dean of the School of Education.

*Wolcott Foundation Scholarships.* Sponsored by the Wolcott Foundation of High Twelve International and available to graduates of accredited colleges who wish to enroll in the School of Government, Business, and International Affairs for graduate work in International Affairs, Public Administration, Personnel Administration, or Business Administration. Preference is given to students who themselves are affiliated with, or whose parents are affiliated with, High Twelve International or the Masonic Order. The fellowships cover tuition for one calendar year of graduate study in residence. Where need is shown, a living allowance up to \$100 a month may be granted. Direct inquiries to Mr. C. M. Farrington, The George Washington University.

## SPONSORED AWARDS FOR GRADUATE STUDY

General information regarding awards sponsored by foundations, government agencies, professional and learned societies, industries, and others which may be used in support of graduate study is available at the Office of Student Financial Aid for students enrolled at The George Washington University. Such scholarships and fellowships include, among others, the Rhodes, Marshall, Woodrow Wilson, Fulbright, Rotary International, Danforth, National Science Graduate Fellowships, and National Defense Graduate Fellowships.

As deadlines for application vary, qualified students should make inquiries well in advance of the year of planned graduate study.

## LOAN FUNDS

Applicants for a National Defense Student Loan or a United Student Aid loan, must file a *Parents' Confidential Statement* and an *Application for Financial Aid*. Deadline for submitting applications with supporting credentials is February 15 preceding the academic year of the award; October 31 for the spring semester. Forms are available at the Office of Student Financial Aid, or in the case of the Parents' Confidential Statement, through the College Scholarship Service. Admission to the University is a prerequisite for consideration.

*National Defense Student Loan Fund.* This fund is available to full-time graduate or undergraduate students with a "superior academic



background" who are in need of financial assistance. An undergraduate student may borrow for college expenses a sum not exceeding \$1,000 a year and, during his entire undergraduate program, a sum not to exceed \$5,000. A graduate or professional student may borrow a maximum of \$2,500 a year. The total loans made to such a student for all years, including any loans made to him as an undergraduate, may not exceed \$10,000.

*United Student Aid Fund.* This fund is available to full-time graduate and undergraduate students who have completed the freshman year and are in need of financial assistance. Undergraduates may borrow up to \$1,000 a year, graduate students may borrow up to \$2,000 a year—up to a combined total of \$4,000.

*Special Loans for  
Graduate Study*

The following loan funds are available to students in the University in accordance with the qualifications placed thereon by the donors. Students should direct inquiries to and submit applications with their respective deans.

*American Medical Association Nursing Home Administration Loan Fund.* For graduate students in nursing home administration. Direct inquiries to Coordinator, Programs in Health Care Administration.

*W. K. Kellogg Foundation Hospital Administration Loan Fund.* A fund for loans to full-time graduate students in hospital administration.

*Long-term Care Loan Fund.* A fund initiated by Sigma Kappa Sorority, Indianapolis, Indiana, for full-time graduate students preparing themselves to administer nursing homes or facilities for the aged. Direct inquiries to Coordinator, Programs in Health Care Administration.



## PRIZES

*Alpha Chi Sigma Prizes.*—*A Handbook on Chemistry and Physics* awarded annually by Alpha Pi Chapter to each of three students who carry at least 18 semester hours during the freshman year and attain the highest averages in freshman chemistry.

The name and year of graduation of the student who has attained the highest quality-point index in courses in chemistry is inscribed on a bronze plaque. The winner must have had at least 16 hours in chemistry including the final semester at this University.

*Alpha Delta Pi Prize.*—Offered annually by Alpha Pi Chapter to the woman in the junior class with the most outstanding record in scholarship, extracurricular activities, and service to the University.

*Alpha Kappa Psi Prize.*—A key, awarded annually by Beta Mu Chapter to the male student who has completed 90 semester hours at this University and attained the highest average grade in economics, business administration, public accounting, public finance, and foreign commerce. The name of the winner and the year of the award is engraved on a plaque in the office of the Dean of the School of Government, Business, and International Affairs.

*American Institute of Chemists Prize.*—A medal and a one-year subscription to *The Chemist* awarded annually to the graduating student, majoring in chemistry, who excels in scholarship, integrity, and leadership.

*Byrne Thurtell Burns Memorial Prize.*—Awarded to the senior majoring in chemistry who shows the greatest proficiency in organic chemistry, as evidenced by a comprehensive examination, and who possesses such qualifications of mind, character, and personality as to give promise of future achievement.

*Wilbur J. Carr Prize.*—This prize of \$200 was established in 1962 by Edith K. Carr, an Honorary Trustee of the University, in memory of

her distinguished husband, who was graduated from the School of Comparative Jurisprudence and Diplomacy in 1899. It will be awarded annually to that man in the graduating class of The George Washington University who has demonstrated outstanding ability in his study of international affairs and who has given evidence of possessing in marked degree the qualities which produce the good citizen and the dedicated public servant.

*Chi Omega Prize.*—Awarded annually by Phi Alpha Chapter to the woman in the graduating class with the highest record in the following social sciences: economics, sociology, political science, and history; combined with general excellence.

*The Columbian Women Prize.*—Awarded to the senior woman who in her undergraduate life has most nearly fulfilled the objectives of Columbian Women.

*Ernest Connolloy Memorial Award.*—Awarded by the Washington Personnel Association to an outstanding graduating senior in business administration who shows general excellence in studies, demonstrates superiority in one or more courses in personnel administration, and shows qualities of leadership or promise through extra-scholastic activities.

*John Henry Cowles Prizes.*—A first prize of \$100 and a second prize of \$75, established by John H. Cowles, Grand Commander of the Supreme Council of Thirty-third Degree (Mother Council of the World) of the Ancient and Accepted Scottish Rite of Freemasonry, Southern Jurisdiction of the United States of America. Awarded annually to the two seniors in the School of Government, Business, and International Affairs with the highest academic averages.

*DeWitt Clinton Croissant Prize.*—Awarded annually to the undergraduate student enrolled in a course in drama or active in University dramatics who submits to the English Department the best essay on drama or the theater.

*E. K. Cutter Prize.*—Established by Marion Kendall Cutter "for excellence in the study of English." Awarded to the member of the graduating class whose record in English, combined with general excellence, shows most marked aptitude for and attainment in English studies.

*Isaac Davis Prizes.*—Awarded annually to the three seniors who made the greatest progress in public speaking while enrolled in the University. Awards are to be determined by a public-speaking contest in which the participants deliver original orations. Only members of the senior class of Columbian College of Arts and Sciences who are candidates for the degree of Bachelor of Arts or Bachelor of Science are eligible to compete.

*Delta Gamma Prize.*—Awarded annually by Beta Rho Chapter to the woman who, at the end of her freshman year, has the most outstanding record in scholarship, extracurricular activities, and service to the University.

*Delta Zeta Prize.*—Awarded annually to the student maintaining the highest average in Biological Sciences 2.

*Elton Prize.*—Established by the Reverend Romeo Elton, of Exeter, England, and awarded annually to the student with the highest average in the most advanced course in the Greek language and literature.

*Jesse Frederick Essary Prize in Journalism.*—A prize of \$200 established by Helen Essary Murphy and awarded annually to a student who



has given promise of sound citizenship and who submits the best printed and published evidence of ability in "forthright reporting" and good journalistic writing, in a student publication or elsewhere.

*Joshua Evans III Prize in Political and Social Sciences.*—A memorial prize of \$100 "established by friends because of an outstanding life." Awarded annually to that man in the graduating class "who has demonstrated his signal ability in the social and political sciences and who has given promise of the interpretation of that ability in good citizenship among his fellows."

*Willie E. Fitch Prize.*—Established by James E. Fitch in memory of his son. Awarded annually to a senior student for the best examination in chemistry.

*Alice Douglas Goddard Prize.*—A memorial established by Frederick Joseph Goddard, of Georgetown, D. C. Awarded annually to the upper-division student making the highest average in American literature.

*Edward Carrington Goddard Prize.*—Established by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard, of Georgetown, D. C., in memory of Edward Carrington Goddard, class of '81. Awarded to the junior or senior student making the highest average in the French language and literature.

*Morgan Richardson Goddard Prize.*—A memorial established by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard, of Georgetown, D. C.

Awarded to the junior or senior student making the highest average in the following fields: economics, business administration, foreign commerce, and public accounting.

*Gardiner G. Hubbard Memorial Prize in United States History.*—Established by Gertrude M. Hubbard in memory of her husband and awarded annually to that member of the graduating class majoring in history who has maintained the highest standing in courses in United States history.

*Kappa Kappa Gamma Prize.*—Awarded annually to the full-time freshman who achieves the best record in Biological Sciences 1.

*Mortar Board Prize.*—A silver cup awarded annually to the woman student in the sophomore class having an average of *B* or higher and the most outstanding record in activities.

*Old Men Prize.*—A plaque awarded annually by the Old Men Board to the man in the junior class who has made outstanding contributions to student activities.

*Order of Scarlet Prize.*—Awarded annually by the Board of Governors of Order of Scarlet to that member of the sophomore class who has the most outstanding record in extracurricular activities and service to the University.

*Omicron Delta Kappa Prize.*—A plaque awarded annually by Alpha Delta Circle to "that member of the senior class who throughout his course has done the most constructive work in the furtherance and up-building of the University student activities."

*Panhellenic Association of Washington, D. C., Prize.*—A trophy to be awarded to the Panhellenic Sorority maintaining the highest yearly scholastic average at the University for the previous year.

*Phi Delta Kappa Prize.*—Awarded annually by Beta Gamma Chapter to the outstanding senior man in the teacher education program in the School of Education.

*Phi Eta Sigma Prize.*—A choice book selected from the field of the recipient's major, awarded annually by The George Washington University Chapter to the male student attaining the highest scholastic average in his first full semester of work. The winner's name is engraved on a plaque in the Office of the Dean of Columbian College of Arts and Sciences.

*Pi Beta Phi Prize.*—Awarded annually by the District of Columbia Alpha Chapter to the woman member of the senior class who throughout her college course has done the most constructive work in the promotion of student activities among the women of the University.

*Pi Lambda Theta Prize.*—Awarded annually by Alpha Theta Chapter to the outstanding senior woman in the teacher education program in the School of Education.

*Psi Chi Prizes.*—Two prizes awarded annually to the best undergraduate student in experimental psychology and to the graduate student submitting the best Master's thesis in psychology by The George Washington University Chapter.

*Ruggles Prize.*—Established by Professor William Ruggles, awarded annually to a candidate for a Bachelor's degree for excellence in mathematics.

*Sigma Kappa Prize.*—Awarded annually by Zeta Chapter to the student with the highest grade in the final examination in General Chemistry.

*Society of Colonial Wars in the District of Columbia Prize.*—A gold medal awarded to a candidate for a graduate degree who, in the judgment of the Faculty of the Department of History, submits a thesis or dissertation demonstrating excellence in historical research in American Colonial history. The University reserves the right to withhold the award if no thesis or dissertation attaining the required degree of excellence is submitted.

*Staughton Prize.*—Established by the Reverend Romeo Elton and awarded annually to the student making the best record in the most advanced course in the Latin language and literature.

*James MacBride Sterrett, Jr., Prize.*—Established by Professor Sterrett in memory of his son, consists of the *American Institute of Physics Handbook* awarded annually to the student who obtains the highest average in Physics 1-2.

*Charles Clinton Swisher Historical Club Prize.*—A prize of \$100 established by the Charles Clinton Swisher Historical Club and augmented in 1941 by the bequest of Professor Swisher, is awarded annually to the student who submits the best essay covering some phase of medieval history.

*Thomas F. Walsh Prize.*—A prize of \$150 awarded annually to the student who submits the best essay in Irish history.

*Alexander Wilbourn Weddell Prize.*—A prize of \$350 established by Virginia Chase Weddell in memory of her husband. Awarded annually to a candidate for a degree who writes the best essay on the subject of

"the promotion of peace among the nations of the world." The prize essays shall become the property of the University and shall not be printed or published without the written consent of the University. The University reserves the right to withhold the award if no essay attaining the required degree of excellence is submitted.

## *Military Awards*

**National Defense Transportation Association Award.**—Awarded to the outstanding senior graduate who qualifies for the Air Force Specialty of Air Transportation Officer or Surface Transportation Officer, in recognition of leadership qualities, academic standing, aptitude for military service, and meritorious achievement in furthering the aims and objectives of the Association in the promotion of preparedness for national defense.

**Air Force Association Silver ROTC Medal.**—Awarded annually to the outstanding senior cadet.

**Reserve Officers' Association Medal.**—A gold medal awarded annually to the cadet enrolled in Aerospace Studies 101-2, who receives the highest grade for the current year in the leadership and academic phases of the Air Force ROTC course.

**Chicago Tribune Gold ROTC Medal.**—Awarded each semester to the cadet enrolled in Aerospace Studies 151-52 who has contributed most effectively to the Air Force ROTC program by leadership and scholastic excellence.

**Unit Leadership Trophy.**—A silver trophy offered by Walter G. Bryte, Jr., Colonel, USAF (Retired), first Professor of Air Science at this University. Awarded annually to the flight judged best in a competitive review and inspection. The Cadet Commander of this flight is presented a set of engraved Second Lieutenant's insignia.

**Pershing Rifles Gold, Silver, and Bronze Achievement Medals.**—Awarded annually by the National Headquarters to outstanding Pershing Riflemen.

**The Air Force Times Award.**—A certificate of merit and a 12 month subscription to the *Air Force Times* newspaper. Presented annually to the graduating cadet at each detachment who has distinguished himself by contributing materially to constructive public attention for his cadet corps.

**Professor of Aerospace Studies Award.**—Awarded annually to the graduating senior cadet who has demonstrated outstanding leadership potential and contributed the most to furthering the aims of Air Force ROTC.

**Military Order of World Wars Gold and Silver ROTC Medals.**—Awarded annually to the numbers 1 and 2 Cadets, respectively, who have demonstrated scholastic excellence in both University and Aerospace Studies courses and have been appointed distinguished Air Force ROTC Cadets.





## REGULATIONS

A STUDENT ENROLLED in the University is required to conform to the following University regulations and to comply with the rules and regulations of the college, school, or division in which he is registered.

A student who withdraws or is suspended, or is otherwise absent from the University for one semester or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return.

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Faculty) for subsequent registration in any unit of the University.

A student may not attend classes until registration is completed and fees due are paid. Regular attendance is required. A student may be dropped from any course for undue absence.

*Attendance*

A student suspended for any cause may not attend classes during the period of suspension.

A student who fails to maintain the scholarship requirements of the college, school, or division in which he is registered may be dismissed from the University.

*Scholarship  
Requirements*

### GRADES

Grades are mailed to the student through the Office of the Registrar at the close of each semester. They are not given out by instructors.

*Undergraduate.*—The following grading system is used: *A*, excellent; *B*, good; *C*, average; *D*, passing; *F*, failing. *CR* indicates credit. Whenever a grade has not been assigned, the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *I*

indicates that a satisfactory explanation has been given the instructor for the student's failure to complete the required work of the course. An "incomplete" cannot be made up after the lapse of one calendar year except by written permission of the dean's council of the college, school, or division concerned. An incomplete which is not removed within one calendar year is automatically changed to an *F*. An incomplete cannot be removed by reregistering for the course. A student may not repeat for grade a course in which he has received a grade of *D* or above, unless required to do so by the department concerned. A written statement to this effect must be submitted to the Registrar by the appropriate departmental chairman.

*Graduate.*—For graduate work, grades are indicated as *A, B, C, F* (for definition of these grades see the appropriate college or school); *I* (incomplete); *CR* indicates credit.

#### THE QUALITY-POINT INDEX

Scholarship is computed in terms of the quality-point index, obtained by dividing the number of quality points by the number of semester hours for which the student has registered, both based on the complete record in this University.

Quality points are computed from grades as follows: *A*, four points; *B*, three points; *C*, two points; *D*, one point; *F*, no points, for each semester hour for which the student has registered. Courses marked *W* or *I* are not considered in determining the index, except that courses marked *I* will be considered when a formal grade is recorded. An incomplete which is not removed within one calendar year is automatically changed to an *F*. Grades in courses taken at another institution are not considered in computing the quality-point index.

#### EXAMINATIONS

Examinations are scheduled at the end of each semester or at the completion of the course.

#### ACADEMIC DISHONESTY

Evidence of dishonesty on the part of any student will result in his suspension from the University upon the recommendation of the appropriate dean's council.

A student found guilty of dishonesty will be suspended for a stated period and will be deprived of credit for all courses in which he is enrolled during the semester in which the dishonest act occurs. A disciplinary grade of "Failure—Academic Dishonesty" will be recorded for each such course, and this grade will be employed in computation of the quality-point index.

If a student suspended because of academic dishonesty should be readmitted, he may be required to repeat for grade all courses for which a disciplinary grade has been recorded, and both the grade earned on repetition and the disciplinary "Failure—Academic Dishonesty" grade will be employed in computation of the quality-point index.

**Withdrawal** Withdrawal from a course or from the University requires the permission of the dean of the college, school, or division in which the student is registered. Permission to withdraw from the University will not be granted a student who does not have a clear financial record. (See "Fees and Financial Regulations," pages 22 and 24.)

Withdrawal between the last working day \* in October and the end of the fall semester and between the last working day \* in February

\* The University work week is Monday through Friday, inclusive.



and the end of the spring semester is permitted only in exceptional cases.

*All charges for courses dropped without the approval of the dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.*

A student may not withdraw from the advanced course of the Air Force ROTC without the approval of the President of the University.

*Changes within a College, School, or Division.*—A student may not change or drop courses (see "Withdrawal," above) or change his status to that of auditor except with the approval of the dean of the college, school, or division in which he is registered.

Change from one section to another of the same course may be made with the approval of the dean and the department concerned.

Change from one major subject to another within the same college or school may be made with the approval of the dean. All requirements of the course of study to which the change is made must be met.

### *Changes in Program of Studies*

*Transfer within the University.*—Transfer from one college, school, or division to another may be made only with the approval of the deans concerned. Except in cases of normal progression from the lower division of Columbian College of Arts and Sciences in a regular baccalaureate program, application for transfer must be made to the Director of Admissions on the form provided by his Office.

Students wishing to transfer from the Division of University Students to a degree granting college or school of the University should note that consideration will be given only to courses approved as applicable toward the degree sought and that a maximum of 45 semester hours will be accepted in transfer.

Students transferring within the University are advised to study carefully the graduation requirements on pages 46-47 and to note that in all undergraduate divisions, except the lower division of Columbian College of Arts and Sciences 30 semester hours, including at least 12 semester hours in the major field, must be completed while registered in the school or college from which the degree is sought. Upon transfer the student should consult the dean concerned and understand clearly the requirements he must fulfill. (For residence requirements in the lower division of Columbian College of Arts and Sciences, see pages 56 and 61.

Credit is given only after registration for a course and satisfactory completion of the required work, or upon the assignment of advanced standing in accordance with the regulations of the several colleges, schools, and divisions.

### *Credit*

On request the Registrar will issue to undergraduate degree candidates a balance sheet showing the amount of work completed and the requirements remaining to be met for the degree. A second balance sheet will be issued only in the event the student changes major or degree objectives.

In special instances, a person who has been admitted to the University may be registered, with the permission of the instructor, as an "auditor" in a class (no academic credit). An auditor is not required to take active part in the exercises or to take examinations. A student who takes a course as an auditor may not take the same course later for credit.

### TRANSCRIPTS OF RECORD

Official transcripts of student records will be issued on request of the student or former student. A fee of one dollar is charged for each

transcript. No transcript will be issued for a person who does not have a clear financial record.

#### SUMMER SCHOOL CREDIT

A student who plans to attend summer school sessions at another institution with the intention of having credits so obtained apply toward graduation from this University must first secure the written approval of the dean of his college or school. In no event will such credits be recognized to an amount in excess of that which might be earned in a similar period in this institution.

#### *Continuous Registration*

Degree candidates are expected to maintain continuous registration until all degree requirements are satisfied. Students who have completed course registration (including the thesis) maintain continuous registration by paying the "continuous registration" fee (see page 22). By failing to register for one semester or more, the student breaks his registration and must be readmitted (see "Readmission," pages 17-18). A "Readmitted Student" is required to satisfy the curriculum requirements existing at the time of his readmission.

Students must be registered during the summer if they elect to take courses, are taking required examinations, are receiving guidance toward theses or dissertations, or are expecting to graduate at the end of the Summer Sessions.

#### *Graduation Requirements*

Diplomas are awarded at a February Convocation, a June Commencement, and in September.

To be recommended by the Faculty for graduation a student must have met the admission requirements of the college or school in which he is registered; completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered; and be free from all indebtedness to the University. Registration, either for course work or on the "continuous registration" fee basis, is required for the semester or summer session immediately preceding the awarding of the degree.

*Application for Graduation.*—Application for graduation must be filed and the appropriate fee paid at the time of registration for the last semester or summer session of the senior or final year. Students completing degree requirements during the Summer Sessions will be awarded diplomas (no formal Convocation) September 30, 1965 provided they have completed all degree requirements and have applied for graduation as a part of registration for the Summer Sessions.

*Scholarship.*—In all undergraduate divisions of the University a quality-point index of at least 2.00 is required for graduation.

The graduate student must meet the scholarship requirements for the particular degree for which he is registered.

*Curriculum.*—Minimum curriculum requirements for each degree are stated under the college or school offering work in preparation for the degree. (For Air Force ROTC graduation requirements see the Department of Aerospace Studies.)

*Residence.*—Unless otherwise specified, in all undergraduate divisions of the University, a minimum of 30 semester hours, including at least 12 hours in the major field, must be completed while registered in the school or college from which the degree is sought. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer work may be



counted toward the residence requirement, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the dean of the college or school concerned to pursue work elsewhere, the work of the senior or final year must be completed in the college or school from which the degree is sought.

The graduate student must meet the residence requirements for the particular degree for which he is registered.

*Graduate Record Examination.*—All candidates for Bachelor's degrees in Columbian College of Arts and Sciences or the School of Government, Business, and International Affairs are required to take two parts of the Graduate Record Examination.

*National Teacher Examinations.*—All candidates for the degree of Bachelor of Arts in Education are required to take the National Teacher Examinations.

*Attendance and Conduct.*—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

*Thesis or Dissertation.*—A thesis or dissertation submitted in partial satisfaction of requirements for a degree, must be presented in its final form to the dean of the college or school concerned no later than the date specified in the University calendar. Three complete copies of each are required. It is the responsibility of the candidate for a graduate degree to obtain from his dean a printed copy of the regulations governing the styling and reproduction of theses and dissertations, which are rigidly enforced.

Accepted theses or dissertations, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the appropriate dean.

#### HONORS

*With distinction.*—In all undergraduate divisions of the University the degree may be conferred "with distinction," at the discretion of the Faculty, if a student attains a quality-point index of 3.50 or higher on all work taken at this institution. To be eligible for this honor a student must have completed at this institution at least one-half of the work required for the degree.

*Special honors.*—Special honors may be awarded by the Faculty to any member of the graduating class for outstanding achievement in the student's major field of work on recommendation of the major department, under the following regulations:

1. The student must have his candidacy for special honors approved by the faculty member representing the major department or field not later than the beginning of the senior year.
2. The student must meet such other conditions as may be set at the time his candidacy is approved.
3. No student will be awarded special honors unless he has a quality-point index of at least 3.00 on all work taken at this institution.
4. To be eligible for honors a student must have completed at this institution at least one-half of the work required for the degree.

#### MILITARY HONORS

A cadet in the Air Force Officers Education Program may be designated a "Distinguished Air Force ROTC Cadet" if he (1) has completed



Aerospace Studies 101-2 with an academic standing in the upper third of all cadets enrolled in his class, (2) has an over-all academic quality-point index of 2.75 or better, (3) possess high moral character and definite aptitude for service in the Air Force, (4) has distinguished himself by demonstrated leadership. A "Distinguished Air Force ROTC Cadet" is authorized to wear a "Distinguished Cadet Badge" over the right breast pocket of the uniform. He may submit an application in advance for a regular commission in the United States Air Force.

An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Graduate" if he has (1) been designated a "Distinguished Air Force ROTC Cadet" and maintained the standards required of a "Distinguished Air Force ROTC Cadet" during the period between designation and graduation, (2) completed the Air Force Officers Education Program (ROTC), and (3) completed the requirements for a Bachelor's degree. A "Distinguished Air Force ROTC Graduate" will be presented with a certificate signed by the Director of the Division of Aerospace Studies and will be considered for a regular commission in the United States Air Force ninety days after entering active service.

**The Library** A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card issued upon the payment of fees, must be presented as identification.

The loan period for most books available for home circulation is two weeks, with an additional two-week renewal. A fine of five cents will be charged for each day a book is overdue. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

**Right to Dismiss Students** The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

**Right to Change Rules** The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

**Property Responsibility** The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

# COLUMBIAN COLLEGE OF ARTS AND SCIENCES

*Dean C.D. Linton*

*Associate Dean G.M. Koehl*

*Assistant Deans J.C. King, W.L. Turner*

*Acting Assistant Dean and Adviser to Special  
Students, J.L. Metivier, Jr.*

## INTRODUCTION

SINCE ITS FOUNDING IN 1821, COLUMBIAN COLLEGE OF ARTS AND SCIENCES, the liberal arts college of The George Washington University, has continued to expand and develop with the city of Washington. Its central situation, close to the buildings of the Federal Government, the concert halls, art galleries, and the parkway along the Potomac River, makes participation in the life of the Nation's Capital convenient for resident students. The cosmopolitan nature of the student body reflects the atmosphere of a great world capital. Because the students come from the fifty states and from eighty-two foreign countries, class discussions and casual student conversations are enriched by a challenging variety of viewpoints.

Columbian College offers undergraduate and graduate programs leading to Bachelor's and Master's degrees; prelegal and premedical programs; the first two years of the professional programs in Education; and in Government, Business, and International Affairs; and two-year terminal curricula in Accounting and Physical Sciences.

All entering freshmen and transfer students of less than junior class standing, except those in the fields of engineering and applied science, enter the lower division of Columbian College. This division is primarily concerned with providing (1) the personal and academic guidance needed by beginning college students in adjusting to college life and in selecting and preparing for a major field and (2) the broad cultural foundations in language and literature, science, and social studies on which major-field specialization in the upper division is built.

During the junior and senior years the student is in the upper division, where he is guided by his major-field adviser. A student who plans to continue toward a Master's degree should plan his Bachelor's program so that it will prepare him for the graduate work of his interest.

Programs leading to the Master's degrees are offered by the graduate division of Columbian College. Students planning to work toward the degree of Doctor of Philosophy may be given provisional status in the Graduate Council, which administers the doctoral programs, during the first year of graduate study, or they may register as Master's candidates in Columbian College and apply for transfer to the Graduate Council upon completion of 24 semester hours of approved graduate work.

### THE COLUMBIAN COLLEGE PROGRAM

The Columbian College program is a contemporary application of the historic liberal arts tradition. Its purpose is to enable the student to develop harmoniously both his particular abilities and his general awareness as a human being. It demands of the student a thorough acquaintance with one major area of learning and at the same time an understanding of how that field of specialization fits into the larger context of the scientific, social, and moral problems which confront modern man. It stresses not merely expertness but that broadly enlightened expertness which encourages its graduates to grow through the years in ability and wisdom.

### Entrance Requirements\*

Good character and an academic background appropriate for the program of studies contemplated are required.

#### LOWER DIVISION

Requirements for admission to the freshman class are as follows:

1. An acceptable certificate of graduation from an accredited secondary school, showing at least fifteen units † which must include four years of English; at least two years of one foreign language; two years of science, preferably with laboratory instruction; two years of social studies, one of which must be American history; and two years of college preparatory mathematics. It is to be noted that one unit of algebra, or the equivalent, is prerequisite to courses in chemistry and statistics, and that one unit in algebra and one unit in plane geometry, or the equivalent, are prerequisite to courses in mathematics and physics.
2. The principal's statement that the applicant is prepared to undertake college work.
3. College Entrance Examination Board scores must be submitted on the Scholastic Aptitude Test and the English Composition Achievement Test. Applicants are urged to submit scores on two additional achievement tests in subjects reflecting their major interests.

It is recommended that the examinations be taken in December or January. Scores on tests taken in the junior year may be submitted.

\* Entrance requirements are established by the faculties of the several colleges, schools, and divisions.

The Director of Admissions, as agent for the faculties, administers regulations governing admission, readmission, and transfer.

† A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods, or the equivalent, of prepared classroom work.



Arrangements for tests is the responsibility of the applicant and should be made with the Educational Testing Service, 20 Nassau Street, Princeton, N. J. 08540; or 1947 Center Street, Berkeley, Calif. 94704, not less than one month before the date of the test. In applying for the test, the student should specify that the scores be sent to the Director of Admissions, The George Washington University, Washington, D. C. 20006.

The Committee on Admission and Advanced Standing will consider the adequacy of the qualifications of an applicant who, because of unusual circumstances, does not present all the formal requirements stated above. The Committee may prescribe appropriate scholastic-aptitude tests of the University.

### UPPER DIVISION

*Bachelor of Arts.*—Sixty-four hours of academic work based on the *Arts and Letters* curriculum in the lower division, or the equivalent (see page 57).

*Bachelor of Science.*—Sixty-four hours of academic work based on the *Science* curriculum in the lower division, or the equivalent (see page 57).

*Bachelor of Science in Medical Technology.*—Sixty-four hours of academic work including Biological Sciences 1-2, Chemistry 11-12, 21, and 22, or the equivalent (see page 58).

### GRADUATE DIVISION

An approved Bachelor's degree from an accredited higher institution, an appropriate distribution of courses, and a superior quality of work in the major field are required. The appropriate report of the Graduate Record Examination, when available, should be sent to the Director of Admissions from the Educational Testing Service. A student from an unaccredited institution may be admitted at the discretion of the Committee on Admission and Advanced Standing, but he may be required to submit scores on the Graduate Record Examination or take extra work.

Applications for admission must be approved by the department and by the Dean.

*Master of Arts.*—A Bachelor of Arts degree at this University with a major in the chosen field, or the equivalent.

*Master of Science.*—A Bachelor of Science degree (Columbian College) at this University with a major in the chosen field, or the equivalent.

*Master of Fine arts in the fields of Painting, Sculpture, Ceramics, or Dramatic Art:*

*Painting, Sculpture, or Ceramics.*—A Bachelor's degree at this University with a major in painting, sculpture, or ceramics, or the equivalent.

*Dramatic Art.*—A Bachelor's degree from an accredited college or university. Desirable undergraduate background includes courses in literature, drama, and the theater.

Applicants for study toward the degree of Master of Fine Arts with academic deficiencies may be enrolled in the program subject to the satisfactory completion of prescribed courses.

## SPECIAL STUDENTS

Some students not immediately eligible for unqualified degree candidacy may be admitted as special students to demonstrate ability in a prescribed program, or to make up deficiencies.

The schedule of a special student consists of courses required in the curriculum to which he wishes to transfer. The choice of courses must be approved by the Adviser. If the undergraduate student has not completed the language requirements of his chosen curriculum at the time of admission, he must include 3 semester hours of language in each 12 hours of work until the requirement is met. Second- or third-group courses may not be taken unless all first-group requirements have been met or are being met concurrently.

All special students are expected to consult with an adviser in Building P at least twice a semester.

Upon satisfactory completion of the prescribed program, the student is automatically assigned full status in the appropriate (lower, upper, or graduate) division of the College. Work satisfactorily completed as a special student is normally applicable to the appropriate degree at the undergraduate level.

The terms of admission of a student attempting to qualify for graduate degree candidacy specify the amount of work applicable to the degree program if the student is later admitted to candidacy.

A student at the undergraduate level who fails to maintain a quality-point index of 2.00 may be dropped.

## Regulations

*Regulations regarding ADMISSION, REGISTRATION, FEES AND FINANCES are stated on pages 15-24; other University regulations, on pages 43-48.*

**Amount of Work** A full-time student who is not on probation may take ordinarily not more than 17 semester hours. A student employed more than 20 hours a week, who is not on probation, may take not more than 10 hours.

The amount of work taken by a student on probation is limited by the Committee on Scholarship.

A full-time student whose quality-point index is 3.50 or higher may take not more than 19 hours. An employed student who meets the same standard may take not more than 12 hours.

A student who accepts employment after registration or at any time during a semester must report that fact immediately to the Dean so that his program may be adjusted, if necessary.

**Attendance** The student is held responsible for all the work of the course in which he is registered, and all absences must be excused by the instructor in charge before provision is made for the student to make up work missed. Excessive absence in any course will lead to loss of credit in that course, even though other requirements, such as tests, term papers, and examinations, are met.

A student whose absences from any class, whether excused or unexcused, are in excess of one-fourth of the total number of class periods will receive the grade of *F* for the course, except by special ruling of the Dean on recommendation of the instructor.

The use of correct English, oral and written, is required in all courses. Any student whose English in any course whatever is deemed unsatisfactory may be reported by the instructor to the Dean and to the Committee on the Use of Correct English. The Chairman of the Committee may assign supplementary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed by failure to make up any such deficiency in English to the satisfaction of the Committee and the Dean.

*Use of  
Correct  
English*

**Lower Division Honor Roll.**—The name of every lower division student who has a quality-point index of 3.50 or higher on the basis of his complete record at this University is placed on the honor roll and published. To be eligible, the student must have completed no less than 15 semester hours. (A place on the honor roll does not necessarily mean that the student will receive honors upon graduation.)

*Honors*

**Dean's List.**—The name of every student who makes a quality-point index of 3.50 or higher on a minimum of 15 semester hours of work taken in any one semester is placed on the Dean's List for that semester.

An undergraduate student must maintain a quality-point index of at least 2.00 or be placed on probation. He remains on probation as long as his index is below 2.00. The student whose average is 2.00 or below for work undertaken during this probationary period is suspended. The student whose over-all quality-point index is still below 2.00 but whose average for work undertaken during the probationary period is above 2.00 may be continued on probation by the Committee on Scholarship.

*Probation*

An undergraduate student whose index falls below 1.50 or who is placed on probation for a third semester, whether successive or after an interval, is suspended.

*Suspension*

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. He must then submit evidence to the Committee on Admission and Advanced Standing that during his absence from the University he has so conducted himself as to indicate that he will profit by readmission. A student suspended twice for poor scholarship will not be readmitted.

**Mid-semester Warning.**—At the end of the seventh week of each semester, instructors file in the Office of the Dean the names of freshman and sophomore students who are doing work of *D* grade or lower. A notice of Warning is sent to the student and a copy filed with the appropriate adviser. A "warning" constitutes notice to the student that he must consult his instructor and adviser at the earliest opportunity.

The foregoing scholarship rules are applied to a student with a limited schedule only when he has undertaken a minimum of 15 semester hours.

**No credit is given for work done by correspondence or in home-study courses.**



**Classification of Students** A *freshman* is a student who is in the process of completing 32 semester hours, including 18 hours of his curriculum requirements.

A *sophomore* is a student who has completed between 32 and 64 hours, including 18 hours of his curriculum requirements.

A *junior* is a student who has completed between 64 and 94 hours and filed the declaration of his major, approved by his adviser, in the Office of the Dean.

A *senior* is a student who has completed between 94 and 124 hours, including at least 6 hours of second-group work in his major.

A *master in course* is a student who has satisfactorily completed the work for the Bachelor's degree and filed his approved program of study in the Office of the Dean.

A *special student* is a student not immediately eligible for unqualified degree candidacy but admitted to Columbian College to demonstrate ability in a prescribed program or to make up deficiencies.

## UNDERGRADUATE PROGRAMS

### The Lower Division

A STUDENT IN THE LOWER DIVISION is given the opportunity of taking a wide range of liberal arts subjects—humanities, foreign languages, sciences, social studies—both as a means of laying the ground work for the more concentrated major-field study in the upper division and as a means of determining what academic area is best adapted to his interests and aptitudes. In order to insure that these general educational requirements are met, the student is not permitted to anticipate major-field special courses until all basic areas are covered.

**Entrance Requirements** Entrance requirements of the lower division are stated on page 50–51.

**Advisory System** Each student in the lower division is provided with two kinds of counseling. *Academic* advising is performed by members of the Faculty selected for their knowledge of freshman-sophomore requirements and programs, and each student makes up his program in consultation with the adviser assigned to him before registration. *Personal* counseling is available to all students, particularly those who find it difficult to adjust to college life. Each student in the residence halls meets from time to time with his Faculty Associate, a member of the Faculty chosen by students and appointed by the Dean of Faculties to consult with small groups of students on personal and nonacademic matters. Further personal assistance is always available through the Offices of the Dean of Men and the Dean of Women. All students are encouraged to maintain close contact both with their academic and their nonacademic Faculty advisers.

An academic warning system permits early attention to students whose work falls below required standards. In such cases, students are required to consult regularly with their advisers. On request, copies of

academic warnings or probation notices may be sent to parents or guardians, who are themselves welcome to meet with members of the advisory staff.

*Preprofessional Students.*—Preprofessional students who intend to transfer after the sophomore year to the School of Education or to the School of Government, Business, and International Affairs are registered in the lower division to complete the curriculum requirements specified by each professional school. Such students are assigned special advisers to assist them in planning their programs.

*English.*—Special placement examinations, required of all entering freshmen, are conducted by the English Department. Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those who show marked superiority may, upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared are assigned to English 1x.

*Foreign Languages.*—A standardized placement examination is required of all entering students who wish to continue in college the language begun in high school (Chinese, French, German, Italian, Russian, or Spanish). Upon completion of the examination, assignment is made to the appropriate course.

*Mathematics.*—Special placement examinations are required of all entering freshmen who expect to register for courses in mathematics. Students showing deficiencies may be assigned to remedial work.

A freshman or sophomore may take second-group courses (courses numbered 101–200) only with the written permission of the Instructor and of the Dean.\* A student is not permitted to postpone a required first-group course in order to take a second-group course for elective credit. The principle that first-group courses must be taken in the freshman and sophomore years, and advanced courses in the junior and senior years in Columbian College and the professional schools, is rigidly adhered to in approving student programs. Freshmen and sophomores on probation may take second-group courses only with the written permission of the Committee on Scholarship.

Except for students intending to apply for the combined degrees of Bachelor of Arts and Doctor of Medicine or the degree of Bachelor of Science in Medical Technology, not more than 12 hours of professional courses may be included in the 124 hours required for the Bachelor's degrees in Columbian College. Lower division students electing professional courses under this rule must obtain the approval of the Dean before registration.

Freshmen and sophomores (except those enrolled in the Physical Education curricula) are required to take Physical Education 1–2 and 11–12 unless they are registered for less than 9 semester hours or unless regular employment during the day makes it necessary to take all classes during the evening hours.

Any other exemptions will be granted only upon written petition which has been recommended by the physical education department concerned and approved by the Dean. Students exempt from the physical education requirement must substitute four hours of elective.

\* Students enrolled in the two-year terminal curriculum in Accounting, may take those second-group courses which are specified as part of their freshman-sophomore curricula without obtaining the written permission of the Instructor or the Dean.

*Required  
Placement  
Examinations*

*First- and Second-  
group Courses*

*Professional  
Courses*

*Physical  
Education  
Requirement*

A student entering the University with advanced standing is not exempt from the physical education requirement unless he has satisfactorily met the requirement elsewhere.

The required medical and physical examinations, as specified by the departments of physical education, will be arranged at the beginning of each semester.

**Foreign Language Requirement**

In curricula requiring foreign languages a student must complete satisfactorily the equivalent of two years of college work in a single foreign language.

A student offering for admission four acceptable high school units of a single foreign language, or the equivalent, is not required to take any foreign language.

A student who offers less than four units and wishes to meet the requirement by continuing in the same language must take the language placement test (see page 55).

In general, one year of high school language is considered equivalent to one semester of college language.

In some instances foreign languages are required or recommended as preparation for advanced work in Columbian College and the professional schools. The student should consult his adviser as to these requirements, so that appropriate foreign languages may be included, when necessary, in his lower division program.

**English Requirement**

Entering students registered in the liberal arts and sciences curricula must follow the sequence of English 1 or 1x, both halves of one of the introductory literature courses, and English 4. This does not apply to students transferring to these curricula or students registering in the preprofessional or terminal curricula.

**Examinations for Waiving Curriculum Requirements \***

A required course may be waived and admission to an advanced course granted by the satisfactory passing of a waiver examination prescribed by the department concerned. Passing this examination does not entitle the student to any hours of credit toward the degree. Written request to take the examination should be made to the Dean and the required fee paid at the Office of the Cashier before taking the examination.

## Lower Division Curricula

Each of the following curricula comprises the first two years of a standard four-year college course.

All curricula in this group lead to the degree of Associate in Arts. Students wishing to receive this degree must apply at the Registrar's Office at the time of registration for the fourth or last semester. The last 15 semester hours must be spent in residence in Columbian College.

\* This provision does not apply to the premedical student, all of whose required premedical work must be taken in a recognized college of arts and sciences.



## IN PREPARATION FOR THE UPPER DIVISION OF COLUMBIAN COLLEGE:

### ARTS AND LETTERS

First two years of the Bachelor of Arts curriculum:

	Semester Hours
Composition English 1 or 1x; 51-52, 71-72, 91-92, Classical Languages 71-72, French 51-52, German 51-52, Russian 91-92 or Slavic 93-94, or Spanish 51-52; English 4...	12
Foreign Language: See page 56 for foreign language requirement	12
Physical Education: See pages 55-56 for statement of requirement	4
Science: Biological Sciences 1-2; Chemistry 3-4, 11-12; Geology 1-2 or 1 and 12; or Physics 1-2	6-8
Social Studies: Anthropology 1-2; Economics 1-2; Geography 51, 52; History 39-40, 71-72; Political Science 9-10; or Sociology 1-2	6
* Elective:	22-24
Total	64

### SCIENCE

First two years of the Bachelor of Science curriculum:

Composition English 1 or 1x; 51-52, 71-72, 91-92, Classical Languages 71-72, French 51-52, German 51-52, Russian 91-92 or Slavic 93-94, or Spanish 51-52; English 4...	12
Foreign Language: French, German, Russian, or nonscience elective	12
NOTE.—A reading knowledge of French, German, or Russian is required. This may be satisfied by French 4, German 4, or Russian 4 or 6, or by special examination.	
Mathematics: Mathematics 3, 6, or electives	6
NOTE.—The Mathematics 3 requirement may be satisfied by offering two years of high school algebra, acceptable for admission; the Mathematics 6 requirement may be satisfied by offering one-half year of high school trigonometry acceptable for admission.	
Physical Education: See pages 55-56 for statement of requirement	4
Science: Biological Sciences 1-2	8
Chemistry 11-12, Geology 1-2 or 1 and 12, Physics 1-2	12-14
Social Studies: Anthropology 1-2; Economics 1-2; Geography 51, 52; History 39-40, 71-72; Political Science 9-10; or Sociology 1-2	6
* Elective:	2-4
Total	64

### PREMEDICAL

Premedical students may follow either the Arts and Letters or the Science curriculum above in fulfilling the first 60 semester hours of the premedical requirement. Each premedical program must be approved by the premedical adviser.

\* It is suggested that electives include one of the following courses: Art 31-32, 71-72; Music 3-4; Philosophy 51-52; Religion 9-10, 59-60.

The student should obtain the advice of his major department as to proper prerequisite and collateral courses for the intended major.

Credit is not given for courses elected in Secretarial Studies; credit may be given for a limited number of courses elected in Physical Education, with the approval of the Dean.

A minimum of 90 semester hours applicable toward a degree in an approved College of Arts and Sciences including:

	Semester Hours
Biology: General biology or zoology (including 4 hours of laboratory) .....	8
Inorganic Chemistry: (including 4 hours of laboratory) qualitative analysis may be counted as part of this .....	8
Organic Chemistry: The equivalent of a one-year college course (including laboratory) .....	6-8
English Composition and Literature: .....	6
Physics: (including at least 2 hours of laboratory) .....	8

With the exception of these specific requirements applicants are urged to follow their personal interests in developing their premedical courses of study. A well-balanced program, rather than a specific field, is the criterion by which an applicant is judged. It is not advisable to take courses that appear to cover subject matter in the medical program.

While well-qualified candidates are eligible for admission after completing the minimal 90 semester-hour requirement, the majority of applicants are found to be better prepared for the study of medicine after four years of college work.

#### MEDICAL TECHNOLOGY

First two years of the Bachelor of Science in Medical Technology curriculum. See page 67 for a description of the program and the requirements for the junior and senior years.

English Composition and Literature: English 1 or 1x; 51-52, 71-72, 91-92, Classical Languages 71-72, French 51-52, German 51-52, Russian 91-92 or Slavic 93-94, or Spanish 51-52; English 4...	12
Foreign Language: French, German, Russian, or nonscience elective .....	12
NOTE.—A reading knowledge of French, German, or Russian is required. This may be satisfied by French 4, German 4, or Russian 4 or 6, or by special examination.	
Mathematics: Mathematics 3, 6, or electives .....	6
NOTE.—The Mathematics 3 requirement may be satisfied by offering two years of high school algebra, acceptable for admission; the Mathematics 6 requirement may be satisfied by offering one-half year of high school trigonometry acceptable for admission.	
Physical Education: See pages 55-56 for statement of requirement .....	4
Science: Biological Sciences 1-2 .....	8
Chemistry 11-12, 21, 22 .....	16
Social Studies: Anthropology 1-2; Economics 1-2; Geography 51, 52; History 39-40, 71-72; Political Science 9-10; or Sociology 1-2 .....	6
*Elective: May be selected in lieu of the various exemptions.	
Total .....	64

\* It is suggested that electives include one of the following courses: Art 31-32, 71-72, Music 3-4; Philosophy 51-52; Religion 9-10, 59-60.

## IN PREPARATION FOR THE SCHOOL OF EDUCATION:

### EDUCATION

First two years of the Bachelor of Arts in Education curriculum of the School of Education:

	Semester Hours
English: Composition 1 or 1x, 2.....	6
Literature 51-52, 71-72, or 91-92 .....	6
Foreign Language: Chinese, French, German, Italian, Latin, Russian, or Spanish. See page 56 for foreign language requirement.	12
Mathematics: Two semesters to supplement senior high school courses, chosen from Mathematics 3, 6, 9, 10 .....	6
Physical Education: See pages 55-56 for statement of requirement .....	4
Psychology: Psychology 1, 22 .....	6
Science: Three semesters (two in biological science and one in physical science or vice versa) to supplement senior high school courses in those fields and chosen from Biological Sciences 1-2; Chemistry 3-4, 11-12; Geology 1-2 or 1 and 12; Physics 1-2. (A student offering for admission two or more acceptable senior high school units in the above areas of science may be exempted from one semester of this requirement.) .....	9-12
Social Studies: History 71-72; Political Science 9-10 .....	6
Anthropology 1-2; Economics 1-2; Geography 51-52; History 39-40, 71-72; Political Science 9-10; Religion 59-60; or Sociology 1-2. (A student offering for admission two or more acceptable senior high school units in social studies may be exempted from this requirement.) .....	6
Speech: Speech 1 (or 11, if the Department so advises) .....	3
Electives: May be selected in lieu of the various exemptions.	
Total .....	64-67

### PHYSICAL EDUCATION FOR MEN

First two years of the Bachelor of Science in Physical Education curriculum of the School of Education:

English: English 1 or 1x, 2 .....	6
Science: Biological Sciences 1-2 (Freshman year), Chemistry 3-4 (Sophomore year) .....	16
Social Studies: History 71-72 or Political Science 9-10 .....	6
Anthropology 1-2 or Sociology 1-2 .....	6
Major Prerequisites: Physical Education 41, 43-44, 55-56; Speech 1 or 11 (Freshman year) .....	10
Physical Education 45-46, 49, 50, 59-60; Psychology 1, 22 (Sophomore year) .....	20
Total .....	64

### PHYSICAL EDUCATION FOR WOMEN

First two years of the Bachelor of Science in Physical Education curriculum of the School of Education:

English: Composition 1 or 1x, 2 .....	6
Literature 51-52, 71-72, or 91-92 .....	6
Physical Education: Physical Education 43-44 .....	4-6
Physical Education 49, 50 .....	6
Physical Education 51-52 .....	4-6
Psychology: Psychology 1, 22 .....	6
Science: Biological Sciences 1-2, Chemistry 3-4 .....	16
	59



Social Studies: Anthropology 1-2; History 39-40, 71-72; Political Science 9-10; or Sociology 1-2	Semester Hours
Academic Electives:	6
	6-10
Total	64

## IN PREPARATION FOR THE SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS:

### GOVERNMENT AND BUSINESS

#### Accounting and Business Administration

First two years of the Bachelor of Business Administration curricula in Accounting and in Business Administration of the School of Government, Business, and International Affairs:

Accounting: Accounting 1-2	6
English Composition: English 1 or 1x, 2	6
*Language or Literature: Chinese 3-4; English 51-52, 71-72, 91-92; French 3-4 or 51-52; German 3-4 or 51-52; Italian 3-4; Russian 3-4 or 6, 91-92 or Slavic 93-94; Spanish 3-4 or 51-52	6
Mathematics: Mathematics 15, 16	6
Physical Education: See pages 55-56 for statement of requirement	4
Science: Biological Sciences 1-2; Chemistry 3-4, 11-12; Geology 1-2 or 1 and 12; or Physics 1-2	6-8
Social Studies: Economics 1-2, Political Science 9-10, Psychology 1, Anthropology 1, Sociology 1, or Psychology 8	15
Statistics: Statistics 51	3
†Elective: (Speech is recommended, students interested in Foreign Commerce include Geography 52)	3
Total	7-9
	64

#### Public Affairs

First two years of the Bachelor of Arts in Government curriculum in Public Affairs of the School of Government, Business, and International Affairs:

English: English 1 or 1x, 2	6
Foreign Language: See page 56 for foreign language requirement	12
Mathematics, Science: Biological Sciences 1-2; Chemistry 3-4; Geology 1-2; Mathematics 3, 6; Physics 1-2; or Statistics 51, 52	6-8
Physical Education: See pages 55-56 for statement of requirement	4
Social Studies: Economics 1-2; History 39-40, 71-72; Political Science 9-10	24
†Elective: To satisfy minimum required credits	10-24
Total	64

\* This requirement is waived for students who offer 4 years of acceptable high school work in a single foreign language.

† Credit is not given for courses elected in Physical Education or Secretarial Studies.

### Business and Economic Statistics

First two years of the Bachelor of Business Administration curriculum in Business and Economic Statistics of the School of Government, Business, and International Affairs:

	Semester Hours
Accounting: Accounting 1-2	6
Economics: Economics 1-2	6
English: English 1 or 1x, 2	6
Foreign Language: See page 56 for foreign language requirement	12
Mathematics: Mathematics 21, 22, 23	9
Physical Education: See pages 55-56 for statement of requirement	4
Political Science: Political Science 9-10, or	
Philosophy: Philosophy 51-52	6
Statistics: Statistics 51 or 91, 52	6
*Elective:	9
Total	54

### INTERNATIONAL AFFAIRS

First two years of the Bachelor of Arts in Government curriculum in International Affairs of the School of Government, Business, and International Affairs:

English: Composition 1 or 1x, 2	6
Literature 51-52, 71-72	6
Foreign Language: See page 56 for foreign language requirement	12
Geography: Geography 52	3
†Mathematics, Science: Biological Sciences 1-2; Chemistry 3-4; Geology 1-2; Mathematics 3, 6; Physics 1-2; or Statistics 51, 52	6-8
Physical Education: See pages 55-56 for statement of requirement	4
Social Studies: Economics 1-2; History 40, 71-72; Political Science 9-10	21
*Elective: To satisfy minimum required credits	4-6
Total	64

### TERMINAL CURRICULA

In addition to the above curricula, the lower division offers the following two-year terminal curricula.

The curriculum in Accounting leads to the degree of Associate in Arts. The curriculum in Physical Sciences leads to the degree of Associate in Science. The last 15 semester hours must be spent in residence in Columbian College.

\* Credit is not given for courses elected in Physical Education or Secretarial Studies.

† This requirement may be satisfied by 6 hours of Mathematics, by 3 hours of Mathematics plus Statistics 51, or by 6 to 8 hours of science.

## ACCOUNTING

The required work may be completed in two years on a full-time basis or in three years on a part-time basis, with the approval of the adviser.

	Semester Hours
Accounting: Accounting 1-2, 101, 111, 121-22, 161, 171, 181, 191, 193 .....	33
Business .....	
Administration: Business Administration 131, 161, 162 .....	9
Economics: Economics 1-2 .....	6
English: English 1 or 1x, 2 .....	6
Physical Education: See pages 55-56 for statement of requirement .....	6
*Elective: To be selected with the approval of the adviser .....	6
Total .....	64

## PHYSICAL SCIENCES

This curriculum is designed for part-time students who do not wish to extend their collegiate education beyond 64 semester hours of work. All other students interested in the study of physical science should follow the Columbian College Science curriculum.

Applied Science: Applied Science 3 .....	3
Chemistry: Chemistry 11, 12, 21 .....	12
English: English 1 or 1x, 2 .....	6
Mathematics: Mathematics 3, 6, 21, 22, 23, 24 .....	12-18
Physical Education: See pages 55-56 for statement of requirement .....	4
Physics: Physics 1-2, 31-32, 51-52 .....	16
*Elective: Speech 1, Economics 1-2 suggested .....	5-11
Total .....	64

## Upper Division

A STUDENT WORKING TOWARD A BACHELOR'S DEGREE in the arts or sciences who has 64 or more acceptable semester hours, whether earned in this University or transferred from another institution, is registered in the upper division of Columbian College. It is assumed that he has met the requirements of the lower division *Arts and Letters* or *Science* curriculum. If he has not, he must begin to make up his deficiencies immediately upon admission and continue to carry courses to this end until all requirements are met.

## THE BACHELOR'S DEGREES

Columbian College through its upper division offers programs leading to the degrees of Bachelor of Arts, Bachelor of Science, and Bachelor of Science in Medical Technology.

In cooperation with the School of Medicine a seven-year curriculum leading to the combined degrees of Bachelor of Arts and Doctor of Medicine is offered.

\* Credit is not given for courses elected in Physical Education or Secretarial Studies.



## RESIDENCE

A minimum of 30 semester hours, including at least 12 hours in the major field, must be completed in residence in the upper division of Columbian College. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior or final year must be completed in residence.

For the regulation governing students who are absent from the University for one semester or more, see page 46.

## Requirements for the Degrees

## CURRICULUM REQUIREMENTS

The curriculum requirements for the Bachelor's degrees include at least 60 semester hours beyond those of the appropriate lower division curriculum and the satisfactory completion of the major. Each program must be approved by the major adviser and by the Dean.

At least 24 of the last 60 hours counted toward the Bachelor's degree must be taken in subjects \* not included in the major field or department. The student should consult his major adviser at each registration concerning his choice of electives.

Except for premedical and medical technology students, not more than 12 hours of professional courses may be included in the undergraduate program. The election of professional courses must be approved by the Dean's Council prior to registration. Ordinarily courses in Physical Education and technical courses in Education will not be approved toward a degree.

A change in degree candidacy (e.g., from Bachelor of Arts to Bachelor of Science) requires the permission of the Dean. The degree requirements effective at the time the change is approved must be met.

Each student must select and file with the Dean a choice of major upon entering the upper division. He may change the major only with the consent of the Dean and of the department or committee concerned, and must meet the requirements for the new major which are in effect at the time the change is approved.

First-group courses may be required as prerequisites to the major, but because of their introductory character they may not be counted as part of such programs. (See "Explanation of Course Numbers.")

Students transferring from other institutions or from other schools, colleges, or divisions in this University with major requirements wholly or substantially met must complete satisfactorily at least 12 semester hours of approved work in the major field in the upper division of Columbian College. This work will count as part of the minimum residence requirement.

**Examination for Waiving Curriculum Requirements.**—A required course may be waived and admission to an advanced course granted by the satisfactory passing of a waiver examination prescribed by the department concerned. Passing this examination does not entitle the student to any hours of credit toward the degree. Written request to take the examination should be made to the Dean and the required fee paid at the Office of the Cashier before taking the examination.

\* Anthropology, Art, Biology, Botany, Chemistry, Chinese, Classical Languages and Literatures, Drama, Economics, English, Geography and Regional Science, Geology, Germanic Languages and Literatures, History, Journalism, Mathematics, Music, Philosophy, Physics, Political Science, Psychology, Religion, Romance Languages and Literatures, Slavic Languages and Literatures, Sociology, Speech, Statistics, Zoology.

American Thought and Civilization 101 *American Civilization* (3), a nondepartmental University-sponsored course, is recommended as a senior-year elective.

#### INDEPENDENT STUDY PLAN

A junior or senior of demonstrated capacity, with special interest in the subject matter of a course, may be permitted to undertake independent study under the personal direction of an instructor, in accordance with the rules of the department or departments concerned. Credit under this plan is limited to the specific course-credits as designated in the list of courses of instruction.

#### GRADUATE RECORD EXAMINATIONS

During the final semester of the senior year students in Columbian College are required to take the following Graduate Record Examinations: the Aptitude Test, which provides a measure of general scholastic ability at the graduate level; and Area Tests (achievement), which measure breadth of knowledge and understanding in three broad areas of the liberal arts: Natural Science, Social Science, and the Humanities.

The examinations are conducted by the University twice a year: the Fall Testing Session for seniors graduating in February, and the Spring Session for those graduating in June. Students expecting to complete degree requirements during the summer sessions should take the examination in the Spring Session. Dates of the examinations are announced in the *Schedule of Classes*.

Each senior must register in the Office of the Dean for the Graduate Record Examination when he registers for his final regular semester of study (excluding summer sessions). A \$10 examination fee is payable at the time of registration.

Students will receive individual reports of test scores and may avail themselves of the regular transcript services of the Educational Testing Service. By special permission seniors who expect to graduate in June may take the Graduate Record Examination at the previous Fall Testing Session, so as to have transcripts available early in the year when applying for admission to graduate schools.

#### BACHELOR OF ARTS

The work of the junior and senior years, including a major in one of the following fields, must be approved by the major adviser and by the Dean.

American Thought and Civilization	Latin
Anthropology	Latin American Civilization
Art:	Mathematical Statistics
Art History and Theory	Mathematics
Painting	Music:
Sculpture	Music History and Literature
Design	Music Theory
Ceramics	Applied Music
Biology	Philosophy
Botany	Physics
Chemistry	Political Science
Classical Archeology and Greek	Psychology
Dramatic Art	Regional Science
Economics	Religion
English Literature	Russian
French Language and Literature	Sociology
Geography	Spanish-American Literature
Geology	Spanish Language and Literature
Germanic Languages and Literatures	Speech
History	Urban and Regional Development
Journalism	Zoology



**Combined Degrees of Bachelor of Arts and Doctor of Medicine.**—A candidate for the combined degrees of Bachelor of Arts and Doctor of Medicine must: (1) complete the Medical School entrance requirements; (2) fulfill the Arts and Letters curriculum of the lower division requirements (see page 57); (3) accumulate 94 semester hours in the liberal arts, including a minimum of 30 in the upper division of Columbian College; (4) obtain the approval of the Dean of Columbian College at the time of entering the School of Medicine; (5) obtain the recommendation of the Dean of the School of Medicine at the completion of all prescribed courses in the first year of the School of Medicine, at which time the degree of Bachelor of Arts will be conferred (professional work taken at another institution will not satisfy the major requirement for the combined degrees); (6) maintain throughout the entire course the scholarship level required for graduation.

### BACHELOR OF SCIENCE

The work of the junior and senior years, including a major in one of the following sciences, must be approved by the major department or division and by the Dean.

#### *Biological Sciences*

Biology  
Botany  
Zoology

#### *Physical Sciences*

Chemistry  
Geology  
Mathematical Statistics  
Mathematics  
Physics

### THE UNDERGRADUATE MAJOR

There are two types of undergraduate majors: the field-of-study major and the departmental major.

Each Field-of-Study Major covers a carefully worked out field of coordinated study and is under the supervision of the appropriate department and the Columbian College Committee on Studies.

#### *Field-of-Study Major*

The *Field-of-Study Major* requires no specific number of semester hours, no specific program of courses, and no specific quality-point index for the major, although the student is required to meet the overall general requirements for the degree (at least 124 semester hours with a quality-point index of at least 2.00). Ability to pass the Major Examination is assumed to be a convincing demonstration that the student possesses the breadth, depth, and quality of knowledge of his major usually defined in terms of semester hours, courses, grades, and a better-than-average quality-point index. A pamphlet on each field is obtainable either from the appropriate adviser or from the Office of the Dean. The prospective student should place himself under the direction of the appropriate adviser immediately upon completing lower division work and beginning his junior year.

The Field-of-Study Major places special emphasis on the intellectual development of the individual student. Programs in the same major may vary, depending upon the individual student's background, previous study, reading habits, and aptitudes. The student is expected to consult his adviser frequently, and the special proseminar offered in the field gives him further opportunity for individual advice and direction in pursuing a program especially adapted to his needs and



abilities. A close student-adviser relationship is essential for the student's success under the Field-of-Study Major plan.

The following Field-of-Study Majors are offered: American Thought and Civilization, English Literature, French Language and Literature, History, Latin American Civilization, Mathematical Statistics, Philosophy, Religion, Spanish-American Literature, Spanish Language and Literature.

The majors in American Thought and Civilization and in Latin American Civilization involve studies in two areas, those of Languages and Literatures and of Social Sciences. The other Field-of-Study Majors, with the exception of the major in Spanish-American Literature, replace departmental majors in their respective fields. A candidate for a Bachelor's degree with a major in English Literature, French Language and Literature, History, Philosophy, Religion, Spanish-American Literature, or Spanish Language and Literature, must elect a Field-of-Study Major.

#### PROSEMINAR IN THE MAJOR

A proseminar is offered in each field to help the student in his reading, study, and laboratory exercises acquire a coordinated knowledge of his field. It is a presentation of the content and methods of the major field as a whole through the organization and coordination of the knowledge obtained in the various formal courses in the major subject and of material not usually included in such courses. This course is not required. Six semester hours, but no qualitative grade, may be assigned. When registered in this course, the student has the privilege of visiting, subject to the approval of the instructor, any other appropriate course offered in the College. (Regular attendance in a course, either for credit or as an auditor, requires registration and payment of tuition.) Proseminars are open only to the student who has been accepted as a candidate under that specific major.

#### THE MAJOR EXAMINATION

The Major Examination will normally be taken at the close of the senior year; a student on a limited schedule may take it no earlier than one calendar year before graduation. A student who fails to pass a Major Examination may, at the discretion of the Committee on Studies, be re-examined at a later regular major-examination period. The Committee on Studies has general supervision of the preparation, reading, and grading of Major Examinations. Major Examinations are held each semester on dates fixed by the department or departments concerned, but in no case later than January 15 for the fall semester, May 15 for the spring semester, and August 26 for the summer session.

#### *Departmental Majors*

*Departmental Majors*, unlike Field-of-Study Majors, are defined in terms of credit hours, required courses, and the attainment of a quality-point index of at least 2.50 in all second-group courses taken in the major field. The minimum specific requirements for Departmental Majors are listed below the staff of instruction of the department concerned. The Chairman of the Department, or designated departmental adviser, should be consulted at registration concerning the student's program of courses; and the entire program, including electives, must be approved by the Department. The student is also expected to consult the Chairman or adviser in all matters affecting his program of studies, such as changes, substitutions, or withdrawals, and especially concerning his progress in his courses. A close student-adviser relationship is cultivated.

Departmental Majors are offered in the following: Anthropology; Art (1) Art History and Theory, (2) Painting, (3) Sculpture, (4) Design, and (5) Ceramics; Biology; Botany; Chemistry; Classical Archeology and Greek; Dramatic Art; Economics; Geography; Geology; Germanic Languages and Literatures; Journalism; Latin; Mathematical Statistics; Mathematics; Music (1) Music History and Literature, (2) Music Theory, and (3) Applied Music; Physics; Political Science; Psychology; Regional Science; Russian; Sociology; Speech; Urban and Regional Development; Zoology.

## **BACHELOR OF SCIENCE IN MEDICAL TECHNOLOGY**

In cooperation with the University Hospital and the Department of Pathology of the School of Medicine, Columbian College offers work leading to the degree of Bachelor of Science in Medical Technology, the fourth year of which (12 calendar months) is spent at the University Hospital.

A candidate for this degree must: (1) Complete the Medical Technology curriculum in the lower division of Columbian College, see page 58. (2) Fulfill the Columbian College requirements for the degree, including 30 semester hours of residence (the junior year) in the upper division. In the junior year Microbiology 211\* and 212 are required; all or most of the remaining courses should be selected from nonscience courses, i.e., social studies, arts, etc. (3) Complete the 12-month Medical Technology Course in the University Hospital (senior year), which constitutes the major, with an attainment of a quality-point index of 2.50.

Each candidate must make application to take the 12-month Medical Technology Course at the University Hospital; this should be done early in the junior year. While admission to the Columbian College degree program does not assure acceptance into the Medical Technology Course, The George Washington University students are given preference.

A number of scholarships are provided by the University Hospital for the students enrolled in the fourth (senior) year of the degree program (see page 29).

For further information concerning the Medical Technology program call FE 3-9000, extension 696.

## **THE GRADUATE DIVISION**

THE GRADUATE DIVISION offers programs leading to the degrees of Master of Arts, Master of Science, and Master of Fine Arts.

Requirements for admission to the Graduate Division are stated on page 51.

*Entrance  
Requirements*

\* The prerequisite of Chemistry 151-52 is waived for Medical Technology students.

**Definition of the Master's Work** The study leading to a Master's degree is a comprehensive survey of an area of knowledge, usually in the student's undergraduate field, with emphasis on scholarly method.

The student must satisfy certain minimum requirements as to preparation, residence, ability to read an approved modern foreign (European) language, and courses taken; but these requirements, while essential, are regarded primarily as qualifying measures. The student's knowledge of his field, as demonstrated by his thesis and by the results of his Master's examination (together with such other examination involving special skills or techniques as the department or the Committee on Studies may require), is the basis upon which the Master's degree is conferred.

#### MASTER OF ARTS

Graduate work leading to the degree of Master of Arts is offered in the following fields:

American Literary and Cultural History	Mathematical Statistics
Anthropology	Mathematics
Art History and Criticism	Microbiology
Biochemistry	Museology
Biology	Pharmacology
Botany	Philosophy
Chemistry	Physics
Economics	Political Science
English and American Literature	Psychology
English Literature	Religion
French Language and Literature	Religious Education
Geography	Sociology
Geology	Spanish-American Literature
Germanic Languages and Literatures	Spanish Language and Literature
History	Speech Rehabilitation
Latin American Civilization	Urban and Regional Development
Linguistics	Zoology

Special programs involving coordinated work in two or more departments may be arranged with the approval of the departments concerned and the Columbian College Committee on Studies.

#### MASTER OF SCIENCE

Graduate work leading to the degree of Master of Science is offered in the following fields:

Anatomy	Mathematics
Biochemistry	Microbiology
Biology	Pharmacology
Botany	Physics
Chemistry	Physiology
Geochemistry	Psychology
Geology	Zoology
Mathematical Statistics	

Special programs involving coordinated work in two or more departments may be arranged with the approval of the departments concerned and the Columbian College Committee on Studies.

#### MASTER OF FINE ARTS

Graduate work is offered leading to the degree of Master of Fine Arts in the fields of painting, sculpture, or ceramics (see the Department of



Art) and in the field of Dramatic Art (see the Department of Speech and Drama).

#### RESIDENCE

Normally, an academic year of residence in the graduate division of Columbian College is required, i.e., completion of a minimum of 30 semester hours of work including the thesis, which is counted as the equivalent of 6 semester hours of course work. Summer work may be counted in residence, but in no case may the period of residence aggregate less than twenty-seven weeks. Not more than 12 semester hours (which must be approved in advance by the Dean) may be taken in another school or division of this University, and such work may not be counted toward both a degree in that school or division and the Master's degree in Columbian College. *No part of the minimum requirement may be taken elsewhere.* All work for the degree of Master of Arts, Master of Science, or Master of Fine Arts must be completed within a maximum of three years, unless the Dean's Council considers the circumstances so unusual as to justify an extension of time.

#### Requirements for the Degrees

#### SCHOLARSHIP

Grades are indicated as *A*, excellent; *B*, satisfactory; *C*, low pass; *F*, unsatisfactory; *I*, incomplete. *CR* indicates credit.

The grade of *A* must be attained in at least 6 semester hours of course requirements for the degree.

An over-all quality-point index of 3.25 must be achieved in course requirements for the degree for graduation. A student whose scholarship is unsatisfactory may be suspended by the Dean upon recommendation of the department under which the student is working. A Master's candidate who does not achieve a 2.75 quality-point index on the first 15 hours of work or thereafter (including prerequisite courses) will be automatically suspended.

Whenever a grade has not been assigned, the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *I* indicates that a satisfactory explanation has been given the instructor for the student's failure to complete the required work of the course. It may not be assigned in the case of extended absence from the class. Although the instructor normally will set a shorter period within which the "incomplete" must be made up, the time cannot be longer than one calendar year except by written permission of the Dean's Council. An "incomplete" which is not removed within one calendar year, or within the shorter period prescribed by the instructor, is automatically changed to an *F*. An "incomplete" cannot be removed by reregistering for the course.

#### PROGRAM OF STUDIES

The student's program of studies must be outlined in detail at the beginning of his work, in triplicate, on forms available at the Office of the Dean. Each program is subject to the approval of the department and the appropriate member of the Committee on Studies. The program may be revised, but any change necessitates a repetition of the procedures just described.

The candidate for the Master's degree ordinarily may specialize exclusively in the field of his choice. Any student, however, whose

undergraduate training does not include at least one full year of work in each of the following areas of study: (1) mathematics or science (with or without laboratory), (2) social science, and (3) the humanities (literature, philosophy, art, music, or religion), must make up this deficiency in his general education before being admitted to candidacy for the Master of Arts degree. This last provision does not apply to candidates for the Master of Science degree.

Courses numbered from 1 to 100 may not be credited toward the Master's degrees, but may in certain instances be required as a basis for advanced work. At least 6 semester hours of the course work required for the degree must be taken in courses numbered over 200. Courses numbered between 100 and 200 may be credited toward the degree, if completion of additional work has been certified by the appropriate officer of instruction. (See "Explanation of Course Numbers.")

A student who expects to continue his studies for the degree of Doctor of Philosophy after receiving the Master's degree is strongly advised to plan his program from the beginning so that work for the lower degree will constitute the initial stage of the doctoral discipline and, upon completion, will admit him to full status in the Graduate Council.

#### FOREIGN LANGUAGE REQUIREMENT

Before being admitted to candidacy the student must show that he has a reading knowledge (certified by the appropriate foreign-language department) of at least one foreign language, selected by the department or committee under which he is studying. A student whose field is a modern foreign language or literature may not offer that language in satisfaction of the reading-knowledge requirement. Any candidate who chooses to meet the language requirement in French, German, Latin, Russian, or Spanish and has not passed the language examination by the end of 15 attempted semester hours must register for French 49, German 47 or 49, Latin 49 or 50, Russian 47 or 49, or Spanish 49, as part of his next registration. The Master's reading examination is given at the beginning and end of each of these courses and, if the course is offered in the summer, at the end of the term. No student will be permitted to take the examination after three unsuccessful attempts. Those enrolled in French 49, German 49, Russian 49, or Spanish 49 who pass the first examination are excused from the course and will receive a refund of tuition. Students who expect to take a reading examination in any approved language other than French, Russian, Spanish, or German should notify the Dean at the time of registration.

*Students are reminded of the necessity for early satisfaction of this requirement, normally not later than the end of the first semester of registration for the degree.*

#### ADMISSION TO CANDIDACY

A student must be admitted to candidacy before he begins the last half of his work for the Master's degree, i.e., not later than the completion of 15 semester hours of degree courses. Application for admission to candidacy is made on a form obtained at the Office of the Dean, and must be approved by the appropriate representative of the department or committee and by the Dean. If a prospective candidate, in his previous academic work, has not substantially satisfied the prerequisites for the Master's degree, including the undergraduate major as defined by the appropriate department or committee, he will



not be admitted to candidacy until such deficiency has been made up. He may make up his deficiencies by electing appropriate courses in addition to those counted toward his degree.

#### THE THESIS

The thesis may be of a research, expository, critical, or creative type. The main purpose of a Master's thesis is to demonstrate the student's ability to make independent use of the information and training acquired through his other disciplines, and to furnish objective evidence of his constructive powers in his chosen field. Registration for the thesis must be no later than the beginning of the final year of preparation, unless the professor in charge of the thesis permits registration at the beginning of the final semester. The choice of the thesis subject must be approved by the professor in charge of the student's field and filed in the Office of the Dean by the date announced in the University calendar. Registration for the thesis is ordinarily made on the basis of 3 hours for each of two successive semesters. In exceptional cases, and with the approval of the Dean of Columbian College, the student may register for the entire 6 hours during a single semester. The thesis in its final form must be presented to the Dean, no later than the date announced in the University calendar. Printed copies of detailed regulations regarding the form and reproduction of the thesis are available in the Office of the Dean.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished an additional successive academic year may be granted without further tuition payment. The student must, however, maintain continuous registration during this period. If the preparation of the thesis extends beyond the two-year period the student must register for the entire 6 hours of thesis again and pay tuition as for a repeated course.

#### THE MASTER'S EXAMINATION

In addition to such other examinations as may be required, the candidate must pass a general written examination on the major subject. Examinations are held on dates fixed by the department or committee, but in no case later than January 15 for the fall semester, May 15 for the spring semester, and August 26 for the summer session. A candidate who fails to pass the Master's Examination may, in exceptional circumstances and with the specific approval of the Committee on Studies, repeat the examination, but only after the lapse of one semester. If he fails a second time, no further opportunity to take the examination will be permitted.





## Faculty and Staff of Instruction\*

*Professors* J.G. Allee, Jr., Joseph Aschheim, J.W. Brewer, H.F. Bright, A.E. Burns, Elizabeth Burtner, Paul Calabrisi, W.E. Caldwell, R.D. Campbell, I.H. Cisin, W.G. Clubb, J.H. Coberly, C.W. Cole, Milton Crane, W.C. Davis, R.H. Davison, V.J. DeAngelis, A.H. Desmond, J.L. Finan, Wood Gray, A.M. Griffin, R.G. Hanken, I.B. Hansen, R.C. Haskett, G.F. Henigan, Jr., P.H. Highfill, Jr., H.H. Hobbs, T.W. Holland, Thelma Hunt, Herbert Jehle, E.H. Johnson, R.C. Jones, E.L. Kayser, J.W. Kendrick, D.C. Kline, G.M. Koehl, W.H. Kraus, Solomon Kullback, J.F. Latimer, H.L. LeBlanc, C.E. Leese, L.P. Leggette, W.K. Legner, B.I. Levy, Edwin Lewis, C.D. Linton, G.L. Lippitt, T.P.G. Liverman, Kurt London, W.A. MacDonald, H.G. Mandel, G.E. McSpadden, Florence Mears, H.M. Merri- man, R.H. Moore, Edith Mortensen, J.N. Mosèl, S.C. Munson, W.H. Myers, C.R. Naeser, N.D. Nelson, R.C. Parlett, T.M. Peery, T.P. Perros, C.W. Pettit, E.L. Phillips, R.E. Purcell (*Visiting*), J.P. Reesing, Jr., Mary Louise Robbins, W.F. Sager, Carol St. Cyr, Minoru Sakaguchi (*Visiting*), R.P. Schlachach, Jr., William Schmidt, Wilson Schmidt, E.S. Shepard, J.R. Sizoo, J.W. Skinner, R.W. Stephens, E.L. Stevens, R.B. Stevens, C.T. Stewart, Jr. (*Research*), Rafael Supervia, Geza Teleki, I.R. Telford, R.B. Thompson, C.S. Tidball, C.R. Treadwell, B.D. Van Evera, Samuel Van Valkenburg (*Visiting*), L.A. Vigneras, R.C. Vincent, R.D. Walk, R.H. Walker, Jr., D.S. Watson, R.L. Weintraub, H.W. Westermann, D.G. White, R.K. White, N.A. Wiegmann, R.E. Wood, S.N. Wrenn

*Adjunct Professor* J.C. Broderick

*Clinical Professor* I.W. Scherer

*Professorial Lecturers* J.L. Angel, S.T. Boggs, L.S. Bowling, D.M. Dri- bin, Grace Evans, H.T. Evans, Jr., Zelda Fichandler, Michael Fleischer, Seymour Geisser, Samuel Greenhouse, F.L. Hadsel, G.R. Herer, Nicholas Hotton, Rufus Isaacs, Margaret Ives, K.C. Kates, G.O. Kent, Morton Kupperman, W.H. Marlow, Albert Maslow, R.E. Moor, R.P. Multhauf, C.L. Perian, F.M. Riddick, Thomas Saaty, L.B. Smith, I.G. Sohn, T.D. Stewart

*Associate Professors* Caroline Adams, F.D. Allan, J.M. Bailey, Otto Bergmann, Lee Bielski, Murray Brown, R.G. Brown, S.J. Brown, James Burks, G.V. Carroll, J.W. Coughlan, J.T. Davis, J.A. Frey, R.N. Ganz, Lyndale George, Frances Henry, Mary Holman (*Re- search*), Rudolph Hugh, P.R. Huntley, Ludvik Janos (*Visiting*), Eva Johnson, J.M. Kaper (*Research*), Hewitt Kenyon, J.C. King, Vir- ginia Kirkbride, F.C. Kurtz, L.P. Leite, H.W. Lilliefors, Hortense Louckes (*Research*), H.R. Ludden, W.L. Marsh, G.E. Mazzeo, Muriel McClanahan, J.L. Metivier, Jr., Joseph Monane, R.A. Naylor (*Visiting*), Benjamin Nimer, H.D. Osterle, Kittie Parker (*Visit- ing*), J.W. Pierce, L.B. Platt, J.W. Robb, R.H. Schlagel, L.E. Schles- inger (*Research*), R.P. Sharkey, B.W. Smith, W.A. Smith, Jeanne Snodgrass, Loretta Stallings, George Steiner, F.R. Tangherlini, Klaus Thoenelt, Elizabeth Tidball (*Research*), W.L. Turner, C.E. Tuthill, G.V. Vahouny, R.C. Willson, Elizabeth Wright, Helen Yakobson, A.J. Zuchelli

\* Professors, Adjunct Professors, Associate Professors, Assistant Professors, and In- structors (full-time) constitute the Faculty. Faculty and Staff of Instruction for the academic year 1964-65.

*Associate Clinical Professors* Katharine Beardsley, Elizabeth Broomhead, M.L. Meltzer

*Associate Professorial Lecturers* Daniel Appleman, H.M. Bain, Jr., S.L. Berlinsky, Joseph Blum, J.R. Buchheit, H.M. Cathey, W.J. Condell, Jr., J.C. Dutro, Jr., D.J. Edwards, Sylvia Gerber, M.A. Gomez, H.C. Hinton, R.K. Kahn, E.G. Kauffman, P.M. Kier, Arthur Kirsch, H.H. Landon, Jr., W.E. Maloney, Damian McElrath, Cynthia Nathan, J.G. Palmer, Herbert Rabin, J.I. Robertson, Jr., Robert Sammons, Abraham Schwebel, Lois Schwoerer, W.A. Shropshire, Jr., R.S. Sigafos, J.A. Simmons, R.B. Simons, Henry Solomon, Robert Stewart, Philip Stoddard, J.C. Wang, W.M. Wolman

*Assistant Professors* Fred Abrams, Lewis Affronti, Bette Barton, S.P. Bjorklund, R.R. Bonato (*Research*), Gayle Clapp, Louise Clubb, R.R. Columbus, D.H. Eargle, Jr., Margaret Ethier, Nicholae Filipescu, M.G. Gallagher, P.F. Gallagher, A.R. Gassaway, Michael Gasster, Lila Ghent (*Research*), W.B. Griffith, J.M. Harrison, C.J. Herber, P.P. Hill, Robert Honeygosky, Ching-Yao Hsieh, S.J. Hunter, R.W. Kenny, Ruth Krulfeld, B.J. Leach, R.K. Lewis, William Long, Margaret McIntyre, Margaret Montzka, J.A. Morgan, Elizabeth Neyman, G.A. Olkhovsky, H.R. Page, Robert Parris, Vac-lav Pfeffer, C.H. Pfuntner, Nadine Popluiko, Francisco Prats, J.A. Quitslund, Bernard Reich, R.M. Riggs, R.C. Rutledge, Paul Sadagursky, K.R. Sanders, Victoria Sandor, Geza Schay, S.O. Schiff, R.E. Stockton, R.H. Tanck (*Research*), Vito Tanzi, D.H. Teller, R.E. Thomas, W.H. Venable, Jr., D.E. Walker, Jr., Dewey Wallace, Jr., C.H. Wollack, S.S. Yeandle, Jr., H.E. Yeide, Jr.

*Assistant Clinical Professors* Alice Adams, H.D. Crowley, Andrea Doman, S.B. Kopp, Boleslaus Kurpiewski, N.G. Markwell, J.M. Smothers, Mimi Spielberg

*Assistant Professorial Lecturers* F.B. Abeles, D.T. Allensworth, S.J. Armore, C.M. Bacon, J.R. Child, F.L. Dennis, Milenko Filipovitch-Nikatch, Paul Gekker, John Gigrich, Fuller Griffith, S.E. Haber, J.C. Haskins, J.V. Hinkel, Kiril Jaszenko, C.H. Koerner, Esther Lawton, Florence Lowndes, M.M. Margulies, J.J. Monroe, W.L. Montgomery, Mabel Morris, A.A. Nilles, Mary Norton, K.F. Oerlein, Virginia Purdy, Louis Robinson, E.W. Seaman, A.B. Seidman, Sally Shames, E.I. Shook, R.H. Shumway, C.H. Slayman, Jr., T.R. Smith, Selig Starr, J.N. Tevis, A.J. Tousimis, Dorothea Wender, A.J. Ziffer

*Studio Lecturers* E.M. Archer, Clifford Chieffo, Sidney Forrest, Teruo Hara, Harold Isen, Ervin Klinkon, Richard Lafean, John Mack, Constance McKay, Marian McNabb, Jack Perlmutter, Cecelia Porter, Peggy Reinburg, Alexander Russo, Berthold Schmutzhart, N.O. Schribner, Jr., John Stephens, Joseph Taney, Mark Thomas, Margaret Tolson, Don Turano, James Twitty, Heinz Warneke, Jule Zabawa

*Instructors* Donna Abbey, A.N. Athanason, Elizabeth Burkley, Anne Cordero, Mary Cunningham, Clyde Dease, Barbara Dunham, H.I. Gates, J.R. Greenya, Julia Hicks, G.P. Huvé, D.R. Janis, J.K. Kern, Karen Lachowitch, J.A.L. Lemay, Eulogia Llansa, R.F. Marler, Jr., Kathleen Mason, T.D. Mead, Beatrice O'Donnell, Beatrice Perazzo, J.R. Roman, Jr., Andrea Santer, A.A. Schultz, Nan Smith, Carl Steiner, F.R. Turaj, Cecilia Uribe, Ruth Weinreb

*Instructors (part-time)* Eileen Allen, Charles Anello, D.B. Beers, Edgar Boling, Elna Broffman, Harrison Clark, Frederick Collier, Ruth Cox,

Lilien Filipovitch, James Gabriel, W.F. Grossnickle, Dorothy Hoelzer, Lianna Larabee, Donna Lerew, R.A. Madigan, D.H. Massie, Mary McHenry, Norma McQueen, Gertrude Mitchell, Jean Morton, Bernice Radovich, Joan Regnell, Lois Richards, R.E. Roberts, Ruth Sherman, Helen Sutton, J.S. Toomey, Vincent Trofi, D.F. White

## COMMITTEES \*

### *Lower Division*

#### THE DEAN'S COUNCIL †

1965: J.M. Harrison, G.E. Mazzeo  
1966: Eva Johnson, T.P.G. Liverman  
1967: R.G. Jones, Elizabeth Neyman

#### COMMITTEE ON ADMISSION AND ADVANCED STANDING

G.M. Koehl (*Chairman*), J.G. Boswell, C.J. Herber, J.C. King, Margaret Montzka, J.R. Roman, Jr.

#### COMMITTEE ON SCHOLARSHIP

W.L. Turner (*Chairman*), R.G. Hanken, J.C. King, Muriel McClanahan, J.L. Metivier, Jr., Edith Mortensen, R.C. Vincent

#### ADVISORY COMMITTEE

G.M. Koehl (*Chairman*), J.G. Boswell, J.C. King, Margaret McIntyre, J.L. Metivier, Jr., J.R. Roman, Jr., W.A. Smith, Loretta Stallings, W.L. Turner, R.C. Vincent

### *Upper and Graduate Divisions*

#### THE DEAN'S COUNCIL †

1965: J.A. Frey, Benjamin Nimer  
1966: Dolan Eargle, Jr., Klaus Thoenelt  
1967: C.J. Herber, J.N. Mosél

#### COMMITTEE ON ADMISSION AND ADVANCED STANDING

C.W. Cole (*Chairman*), Edith Mortensen (*Secretary*), P.P. Hill, R.G. Jones, D.G. White

#### COMMITTEE ON THE USE OF CORRECT ENGLISH

R.H. Moore (*Chairman*), J.G. Allee, Jr., G.F. Henigan, Jr., Muriel McClanahan, R.C. Willson

#### COMMITTEE ON SCHOLARSHIP

Florence Mears (*Chairman*), Louise Clubb, J.A. Frey, H.M. Merriman, S.N. Wrenn

#### COMMITTEE ON STUDIES

C.D. Linton (*Chairman*), A.H. Desmond, P.H. Highfill, Jr., H.L. LeBlanc, William Schmidt

#### COMMITTEE ON LINGUISTIC STUDY

J.G. Allee, Jr. (*Chairman*), W.G. Clubb, P.F. Gallagher, J.C. King, G.E. McSpadden, N.D. Nelson

\* The Dean of Columbian College of Arts and Sciences is an ex officio member of all committees.

† Elected by the Faculty.



## THE GRADUATE COUNCIL

Dean A.E. Burns

THE GRADUATE COUNCIL offers a program of advanced study and research leading only to the degree of Doctor of Philosophy. It was established in 1930 to replace the Graduate School which had formerly administered work for the Master's as well as the Doctor's degrees. The Graduate Council provides a doctoral discipline which moves freely across administrative lines dividing departments of instruction or fields of study. It gives personal supervision to a limited number of students, each of whom has his own consultative committee, examinations, and research direction.

### *Introduction*

For admission to doctoral work the student must possess adequate preparation for advanced study, together with acceptable personal qualities and a capacity for creative scholarship. Adequate preparation presupposes a satisfactory Bachelor's degree in the same general field as that proposed for doctoral study. Students beginning the first year of graduate study who plan to work towards the degree of Doctor of Philosophy may be given provisional status in the Graduate Council. However, if these students wish, and if the Dean of Graduate Council so advises, they may register for the Master's degree in the liberal arts college (Columbian College of Arts and Sciences) or in the School of Government, Business, and International Affairs during the first year and apply for transfer to full status in the Council upon completion of 24 semester hours of approved graduate work. Students with one year of acceptable graduate work from another approved institution, may be admitted to full status.

### *Admission Procedure*

Application forms may be obtained from the Office of the Dean of the Graduate Council. The form must be filled out completely and returned with the application fee of \$15, together with a recent photograph, signed by the applicant. At the time of filing the application, the student should request that transcripts of all previous academic training be sent to the Office of the Dean, together with letters of

recommendation. Each application, with transcripts and letters, is examined by a committee which, if the applicant is accepted, constitutes his Consultative Committee. This Committee supervises all aspects of the student's program and work leading to the General Examination.

**Registration Procedure** An applicant, upon receiving a letter of admission from the Graduate Council, is eligible to register at the beginning of the next semester. Doctoral students come directly to the Graduate Council Office to begin their registration process each semester.

**Plan of Work** The discipline for the degree is divided into three stages. (1) The first year of graduate study constitutes the initial stage, either in the Graduate Council on provisional status, or in Columbian College of Arts and Sciences or the School of Government, Business, and International Affairs enrolled as a Master's candidate intending to gain full status in the Council.\* (2) Full status in the Council follows completion of the first year of graduate study and culminates in the General Examination. (3) The final stage is given to research and investigation of a particular project in a special field, the presentation of the findings in a written dissertation, and the Final Examination.

**Language Requirement** French and German are the normally required languages. However, Spanish and Russian are acceptable, and other languages important to the student's research interest may be approved by the Consultative Committee.

The language requirement may be satisfied by passing examinations or by satisfactorily completing the appropriate reading courses for non-major students (French 49, German 49, Russian 49, Spanish 49).

If the student elects to meet the requirement by taking examinations, the Office of the Dean will make the necessary arrangements whenever the student feels prepared. The examination in one language must be passed by the beginning of the second semester following admission; the examination in the second language must be passed well before the completion of work for the General Examination.

**The First Year of Study** A student who enters the Graduate Council on provisional status to undertake the first year of graduate study has his program planned by a Consultative Committee. If the first year of work is taken in Columbian College of Arts and Sciences or the School of Government, Business, and International Affairs preparatory to gaining full status, Graduate Council advisers aid in planning the Master's program to fit the work into the doctoral program of the student. Upon satisfactory completion of the first year, the student is eligible to apply for full status. Students who have completed a year of satisfactory graduate work at other universities are also eligible to apply directly for full status in the Graduate Council.

**Study for the General Examination** At the beginning of the student's full status, the Consultative Committee is assigned to direct his work in an integrated group of fields of learning, usually five or six in number, deemed necessary to insure his breadth of knowledge, as well as to support the dissertation project in his central field. Members of the Consultative Committee advise the student concerning the scope and content of these supporting fields, and assist him in preparation for his examination in them.

This advanced study in full status does not entail the taking of a

\* Students on a part-time basis will normally complete a year of graduate study in two years.



second full year of graduate courses and seminars. Additional course work may not be necessary in some cases; in any event, the Consultative Committee determines whether such additional course work is needed, and if so, how much. In this stage of the work the main emphasis in preparation is on conferences with committee members and independent study. Performance in the General Examination is the test of the student's ability to enter upon the final stage of his doctoral discipline.

The examination is a series of written tests usually extending over a period of two weeks. The major portion of a day is given to each part of the examination covering one of the fields of study on the student's program. If the results of the examination are satisfactory the student is admitted as a doctoral candidate, to pursue his specialized study and research under the supervision of a member of the Council.

After the student has been admitted as a doctoral candidate and his research program has been arranged, he is responsible to the member of the Council who directs his research project. The Consultative Committee, in keeping with tradition, goes out of existence with the successful completion of the General Examination. The Committee, however, can make recommendations either to the student or the Research Director, for the period following the General Examination—but cannot impose these as advance requirements. In special instances an advisory committee (which may or may not correspond in personnel with the previous Consultative Committee) may be convened to consider major questions concerning the program of a given student in the period after the General Examination. Generally, such a committee would be named by the Dean at the request of the Research Director. The responsibility for the program between examinations rests with the Director of Research, with the understanding that whenever a Director and Co-director arrangement obtains, that member on the permanent staff of the University shall have final responsibility on matters of policy and program. The Director of Research and the advisory committee may require further course work, where circumstances warrant such action.

The candidate may enjoy unrestricted use of all the academic facilities of the University. When necessary, the Graduate Council makes provision for sending the candidate to some other institution, library, or laboratory for special study in connection with his doctoral investigation.

The doctoral dissertation is required of all candidates as evidence of ability to perform scholarly research and to interpret its results. The student's dissertation subject and plan must be approved by the Director and two members of the General Examination Committee, after the General Examination is passed and before his actual research is begun.

No later than the date specified in the University calendar the candidate must submit to the Dean three complete copies of the dissertation (including a summary which is to be inserted as an appendix) together with a fourth copy of the summary and a copy of the abstract for inclusion in the announcement of the examination. Printed copies of detailed regulations regarding the form and reproduction of the dissertation and its summary are available in the Office of the Dean. The summaries of accepted dissertations are printed in a numbered issue of the University BULLETIN. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation. Accepted

*Research,  
the Dissertation,  
and the Final  
Examination*



dissertations, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the Dean.

When the completed dissertation has been approved by the Director of Research and by two other members of the Council, and submitted to the Office of the Dean, the candidate is presented for his final examination. This examination is oral and open to the public. The committee of examiners includes not only members of the Council competent in the research field or in closely related subjects, but also at least two qualified experts from other research institutions brought to the University to participate in the examination. If the candidate satisfies the examining committee concerning the high quality and originality of his contribution to knowledge as well as his mastery of the scholarship and research techniques of his field, the Council recommends him for the degree of Doctor of Philosophy.

### FIELDS OF RESEARCH

The following fields of research have been authorized by the Graduate Council as those in which doctoral investigations and dissertations may be undertaken. The supporting fields of study required of all candidates for the degree of Doctor of Philosophy are specified for each individual student by his Consultative Committee before admission to study under the Council.

This list of fields is subject to such changes as the educational resources of the University may direct. The prospective student may address preliminary inquiries concerning his research interests to the member of the Council who is in charge of the field, or to the Dean of the Graduate Council.

<i>Literatures and Languages</i>	<b>American Fiction</b>	Coberly
	<b>American Thought and Culture</b>	
	This program combines work in Literature and History	
	Social Themes in Literature	Walker
	<b>English</b>	
	(1) Sixteenth Century Drama; (2) Seventeenth Century Drama	
	Seventeenth Century Literature	
	(1) Eighteenth Century Literature; (2) History of English Drama	Reesing
	Twentieth Century Literature	Highfill Linton
	<b>Germanic</b>	
	(1) German Classicism; (2) German Romanticism	Thoenelt
	(1) German Realism; (2) Twentieth Century German Literature	
	Linguistic Analysis	Osterle
	(1) Middle High German Language and Literature; (2) Early New High German Language and Literature	Allee, King
	Old High German Language and Literature	Legner
	Old Norse Language and Literature	King Allee

## Romance

French Literature since 1880	Clubb
(1) Eighteenth Century French Literature; (2) Twentieth Century French Literature	
(1) Middle French Literature; (2) Old French Literature; (3) Romance Philology	Vigneras
(1) Nineteenth Century French Literature; (2) Symbolism in Poetry of the Modern Period	Frey
Seventeenth Century French Literature	Protzman
(1) Eighteenth Century Spanish Literature; (2) Nineteenth Century Spanish Literature	Mazzeo
(1) Linguistics; (2) Spanish-American Literature; (3) Spanish Literature	McSpadden
Modern Spanish Literature	Alonso
(1) Nineteenth Century Spanish Literature; (2) Twentieth Century Spanish Literature	Supervía
(1) Spanish-American Literature; (2) Modern Spanish Literature	Robb

## American Thought and Culture

(See Literatures and Languages)

## Social Sciences

### Economics

Economic History	Sharkey
Economic Policy	Watson
Economic Theory	Stewart, Watson, Skinner
Econometrics	Brown
History of Economic Thought	Burns
International Economics	Schmidt
International Finance	Polak, Young, de Vries
Methodology of Economics	Skinner
Money and Banking	Aschheim
National Income	Kendrick, Colm
Public Finance	Colm
Soviet Economics	
Transportation	Kennedy

### Geography

City Planning	J. Davis, LeBlanc, Westermann
Cultural Geography	Campbell, Mosé
Regional Industrial Development	J. Davis, Westermann
Regional Planning	Campbell
Regional Science	Campbell, Westermann, J. Davis

### History

European: Diplomatic since 1815	R. Davison
European: Nationalism	Kayser
European: Russian and Soviet	Thompson
History of Land Legislation	Rasmussen
History of Religion in the United States	
Latin American	W. Davis
The Modern Near East	R. Davison
United States: Diplomatic	Merriman
United States: Political	Haskett
United States: (1) Social; (2) Economic	Gray

### International Relations

The program in International Relations includes work under the departments of Economics, History, and Political Science

Sino-Soviet Area	London
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### Political Science

Comparative Government and Political Theory	Kraus
International Law: (1) War and Neutrality; (2) Arbitration	Brewer

International Politics	Nimer
International Politics and Organization	
International Relations	
International Relations, especially American Foreign Policy	Haviland
(1) The Political Process; (2) Political Controls Over Administrative Agencies	LeBlanc
United States: (1) The Legislative Process; (2) Governmental Organization and Administration	West
<b>Psychology</b>	
Clinical	Hunt, Mercer, Phillips, Levy
Comparative	Caldwell
Experimental	Hill, Walk, Finan, Caldwell
Personnel	Mosél
Psychometrics	Mosél
Social	Schlesinger, Tuthill, Haythorn

**Mathematical and  
Physical Sciences**

**Biophysics**

The program in Biophysics includes work in the Physical, Chemical, Biological, Mathematical, and Medical Sciences

Jehle, Yeandle

**Chemistry**

Analytical	Schmidt
Chemistry of Natural Products	
Geochemistry	Naeser, Christ
Inorganic	Naeser, Perros, White
Organic	Wrenn
Physical: Kinetic and Electrochemistry	Wood
Physical Organic: Reaction Mechanisms	
Physical: Solubilities	Van Evera

**Geology**

Geochemistry	Christ, Naeser
Geomorphology	Teleki
Paleontology	Kauffman
Stratigraphy	Teleki

**Mathematics**

Algebra: Finite Groups	
Algebra: Matric Theory	Wiegmann
Analysis: Functional Analysis	Liverman
Analysis: Infinite Series	Mears
Mathematical Logic	Nelson

**Physics**

Atmospheric Physics	Clark
Behavior of Electrons in Solids	Hobbs
Biophysics; Theoretical: (1) Quantum Mechanics; (2) Molecular Physics; (3) Relativity	Jehle
Electron Optics	Marton
Experimental Biophysics	Yeandle
(1) Experimental Nuclear Physics; (2) Radioactivity	
Low Energy Nuclear Physics	Gove
Positron Annihilation in Condensed Media	Zuchelli
Theoretical	Bergmann
Theoretical: Aerodynamics	Frenkiel

**Statistics**

(1) Biometrics; (2) Design of Experiments	Greenhouse
Econometrics	M. Brown
Information Theory	Kullback
Multivariate Analysis	Geisser
Operations Analysis	Bright, Lilliefors
Sampling	Bright
Statistical Inference	Kupperman



## Medical Sciences

### Anatomy

Embryology  
Gross Anatomy  
Histology  
Neuro-ophthalmology  
Physical Anthropology

Allan  
Telford  
Telford, Johnson  
von Sallmann  
T. Stewart

### Biochemistry

Amino Acid Metabolism  
Animal Nutrition  
Biochemical Detoxication  
Biochemistry of Cancer  
Carbohydrate Metabolism  
(1) Chemistry and Metabolism of Carbohydrates; (2) Biochemistry  
of Tissue Culture  
Chemistry and Metabolism of Lipids  
Chemistry and Metabolism of Proteins  
Complex Lipids  
Intermediary Metabolism  
Lipids  
Metabolic Relationships of Insulin  
Protein Biosynthesis  
Protein Metabolism  
Tissue Respiration

La Du, Udenfriend  
Briggs  
Brodie  
Greenfield  
Stetten  
Bailey  
Vahouny  
Carroll  
Brady  
Mertz, Seegmiller  
Treadwell  
Grant  
Lenhoff  
Rabinovitz, Kern  
Burk

### Microbiology

Bacterial Physiology and Nutrition  
Determinative Bacteriology  
Immunology  
(1) Immunochemistry; (2) Microbial Physiology  
(1) Intestinal Microbiology; (2) Immunology: Antigenic Analysis  
Medical Parasitology  
(1) Mycology; (2) Parasitology  
Virology

Altenbern  
Hugh  
Surgalla, Wright, Parlett  
Affronti  
Griffin  
Jacobs  
O'Hern  
Robbins, Brown, Weiss

### Pathology

Comparative Pathology

Peery

### Pharmacology

Chemotherapy  
Drug Metabolism  
Neurohormones

Goldin, Mandel, Hahn  
Axelrod, Cohn, C. Davison, Gillette, Mazel, Mandel  
Udenfriend

### Physiology

Cardiovascular Physiology  
Cellular Physiology  
Endocrinology  
Gastrointestinal Physiology  
Membrane Physiology  
Neurophysiology  
Respiratory Physiology

Leese, Sarnoff  
Duryee, Hoffman  
Hertz, Alpert, Umberger, Hagerman  
Tidball, Louckes  
Tidball, Alving  
Leese, Alving  
Tidball

### Biology

Cytology

Biological  
Bowman, Scott Sciences

### Biophysics

(See Mathematical and Physical Sciences)

### Botany

Cell Physiology  
Cytogenetics  
Mycology  
Photobiology

Shropshire, Weintraub  
R. Stewart  
Hacskaylo, Stevens  
Shropshire

Plant Ecology  
 Plant Pathology  
 Plant Physiology: Microorganisms  
 Plant Physiology: Vascular Plants  
 Plant Taxonomy  
 Plant Virology

Sigafoos  
 Stevens  
 Hacksaylo, Weintraub  
 Cathey, Weintraub  
 Parker, Smith  
 Kaper

#### Zoology

Comparative Vertebrate Endocrinology  
 Entomology: Insect Physiology  
 Histophysiology  
 Radiation Biology  
 Taxonomy; Anatomy; Physiology of Mollusks  
 Vertebrate: Embryology and Morphogenesis  
 Vertebrate: Ichthyology

Leach  
 Munson  
 Desmond  
 Schiff  
 Rehder  
 Hansen  
 Schultz

### RESIDENCE AND CONTINUOUS REGISTRATION

The Graduate Council expects all students to work on their doctoral programs in residence, although there is no formal regulation concerning the minimum amount of time of resident study either in preparation for the General Examination or as a doctoral candidate engaged in doctoral research. The student who undertakes either part of the doctoral program on full or limited schedule must, in accordance with University regulations, maintain "continuous registration" under the Graduate Council even when the Council has granted a leave of absence for study or residence elsewhere. Failure to maintain registration in each semester of the academic year breaks the registration of the student. In such case, the student must reapply for admission to the Council, under whatever new conditions and regulations are set up by his Consultative Committee or the member of the Council who directs his research. The student who has completed his tuition requirements, but whose graduation is deferred for any reason, must maintain "continuous registration" by paying the "continuous registration" fee for the semester immediately preceding the graduation at which he expects to receive his degree.

### REGULATIONS

*Regulations regarding REGISTRATION, FEES AND FINANCES are stated on pages 15-24; other University regulations, on pages 43-48.*

**Postdoctoral Study** The Council expects its graduates to continue their interests in advanced study and research, and to contribute to its program. They may continue any studies in the University without payment of tuition, and enjoy all University library privileges. Such graduates are required to pay only the usual "continuous registration" fee in order to establish their active membership in the University. The use of laboratory space and equipment is contingent upon availability, and the cost of all laboratory or special library material is paid by the graduate. Special arrangements for such privileges must be made with the Dean of the Council well before the semester in which the graduate wishes to register. Postdoctoral work taken under this privilege may not be applied toward any degree offered by the University.

A limited number of teaching fellowships are assigned annually to certain departments of instruction open to doctoral students registered in the Graduate Council. In many departments of instruction graduate assistants are appointed to assist in the academic program. Applicants for teaching fellowships and graduate assistantships should inquire directly of the chairman of the department concerned regarding vacancies, details of appointment, and the kind of personal data to be supplied for consideration.

*Teaching  
Fellowships and  
Graduate  
Assistantships*

The University is participating in the following Government Fellowship Programs: National Aeronautics and Space Administration Predoctoral Fellowships, National Science Foundation Cooperative Graduate Fellowships and Summer Fellowships for Graduate Teaching Assistants, and United States Public Health Service Predoctoral Fellowships and Training Grants. Qualified students should write directly to the Dean of the Graduate Council for information and applications for these Fellowships.

*United States  
Government  
Fellowships*

### **Members of the Council\***

*Professors* J.G. Allee, Jr., L.K. Alpert, Joseph Aschheim, J.W. Brewer, H.F. Bright, A.E. Burns, W.E. Caldwell, R.D. Campbell, W.G. Clubb, J.H. Coberly, W.C. Davis, Clarke Davison, R.H. Davison, A.H. Desmond, J.L. Finan, Wood Gray, A.M. Griffin, I.B. Hansen, R.C. Haskett, P.H. Highfill, Jr., H.H. Hobbs, Thelma Hunt, Herbert Jehle, E.L. Kayser, J.W. Kendrick, W.H. Kraus, Solomon Kullback, H.L. LeBlanc, C.E. Leese, W.K. Legner, B.I. Levy, C.D. Linton, T.P.G. Liverman, Kurt London, H.G. Mandel, G.E. McSpadden, Florence Mears, H.M. Merriman, J.N. Mosél, S.C. Munson, C.R. Naeser, N.D. Nelson, R.C. Parlett, T.M. Peery, T.P. Perros, E.L. Phillips, J.P. Reesing, Jr., Mary Louise Robbins, W.F. Sager, William Schmidt, Wilson Schmidt, J.W. Skinner, R.B. Stevens, C.T. Stewart, Jr. (*Research*), Rafael Supervía, Geza Teleki, I. R. Telford, R.B. Thompson, C.S. Tidball, C.R. Treadwell, B.D. Van Evera, L.A. Vigneras, R.D. Walk, R.H. Walker, Jr., D.S. Watson, R.L. Weintraub, H.W. Westermann, D.G. White, N.A. Wiegmann, R.E. Wood, S.N. Wrenn

*Associate Professors* F.D. Allan, J.M. Bailey, Otto Bergmann, Murray Brown, J.T. Davis, J.A. Frey, C.W. Hill, Rudolph Hugh, J.M. Kaper (*Research*), J.C. King, H.W. Lilliefors, Hortense Louckes (*Research*), G.E. Mazzeo, Benjamin Nimer, H.D. Osterle, J.W. Robb, L.E. Schlesinger (*Research*), R.P. Sharkey, Klaus Thoenelt, C.E. Tuthill, G.V. Vahouny, A.J. Zuchelli

*Assistant Professors* Lewis Affronti, V.H. Cohn, Jr., B.J. Leach, Paul Mazel, Elizabeth O'Hern, S.O. Schiff, S.S. Yeandle, Jr.

### **Consultants in Research\***

Antonio Alonso, R.A. Altenbern, Barbara Alving, Julius Axelrod, P.W. Bowman, Roseoe Brady, Jr., G.M. Briggs, B.B. Brodie, Arthur Brown, Dean Burk, W.R. Carroll, H.M. Cathey, C.L. Christ, J.F. Clark, Ger-

\* Members of the Council and Consultants in Research for the academic year 1964-65.



hard Colm, Margaret deVries, W.R. Duryee, F.N. Frenkiel, Seymour Geisser, James Gillette, Abraham Goldin, N.B. Gove, R.L. Grant, R.E. Greenfield, Jr., Samuel Greenhouse, Edward Hacksaylo, D.D. Hagerman, F.E. Hahn, H.F. Haviland, Jr., W.W. Haythorn, Roy Hertz, Joseph Hoffman, Leon Jacobs, L.C. Johnson, E.G. Kauffman, R.D. Kennedy, Milton Kern, Morton Kupperman, B.N. LaDu, Jr., H.M. Lenhoff, L.L. Marton, Margaret Mercer, Walter Mertz, Kittie Parker, J.J. Polak, M.I. Protzman, Marco Rabinovitz, W.D. Rasmussen, H.A. Rehder, S.J. Sarnoff, L.P. Schultz, D.B. Scott, J.E. Seegmiller, W.A. Shropshire, Jr., R.S. Sigafos, L.B. Smith, DeWitt Stetten, Jr., Robert Stewart, T.D. Stewart, M.J. Surgalla, Sidney Udenfriend, E.J. Umberger, Ludwig von Sallmann, Emilio Weiss, W.R. West, G.G. Wright, R.A. Young



# THE SCHOOL OF EDUCATION

Dean F.N. Hamblin

Assistant Deans R.E. Baker, B.S. Root

## INTRODUCTION

IT IS THE PURPOSE OF THE SCHOOL OF EDUCATION to prepare teachers, counselors, and administrators for the higher ranges of educational service and to offer opportunities to teachers of experience to extend their education. The School includes the departments of Education and Physical Education. It offers both graduate and undergraduate work. Other departments of the University provide general education and subject-matter courses needed for a well-balanced program of teacher education. In addition to programs of study leading to the degrees, the School offers nondegree programs for certification and affiliates with the Washington School of Psychiatry in course offerings.

Special curricula are provided for liberal arts graduates and for housewives and retired military personnel with appropriate degrees who wish to prepare for teaching. The School also provides a wide range of courses of interest to emergency teachers who wish to qualify for teaching certificates and teachers who wish to renew licenses.

Laboratory and clinical facilities are provided by the University Reading Center and Speech Clinic. In cooperation with public and private schools and a wide variety of social agencies ample opportunity for field experience is provided.

The schedule of courses is arranged to meet the convenience of both full-time and part-time students. By attending evening, Saturday, and summer classes, teachers in the schools of the metropolitan Washington area and others within commuting range may complete all the requirements for a degree without giving up their positions.

The University began offering professional courses for teachers in 1904-5 and in 1907 it established a Division of Education. In 1909, the Division of Education became the Teachers College which, in its early years, was concerned largely with teacher preparation on the undergraduate level.

In 1928, the Teachers College became the School of Education and

*Historical  
Development*

greater provision was made for advanced study. Since that time the graduate enrollment has steadily increased with the result that today the School has a considerably larger number of graduate than undergraduate students.

*Advantages of  
Study in the  
Nation's Capital*

Washington is rich in the resources needed by teachers, counselors, and administrators to supplement classroom instruction. In addition to the library facilities of the University, the Library of Congress; the Library of the Department of Health, Education, and Welfare; and many special collections provide unexcelled opportunities for reading and research. The operation of all branches of the National Government may be observed. Among the art galleries are the National Gallery of Art, the Corcoran Gallery of Art, the Freer Art Gallery, Phillips Memorial Gallery, and the National Museum. The music calendar of Washington is a full one, and includes concerts by the National Symphony Orchestra, Philadelphia Orchestra, and the Boston Symphony Orchestra. Those interested in science find many resources for study at the National Museum, the National Zoological Park, the United States Botanic Garden, and the Aquarium of the Fish and Wildlife Service, Department of the Interior. Students have unique opportunities to become acquainted with the work of the Office of Education, the National Education Association, the American Council on Education, and many other national organizations with headquarters in Washington.

## EDUCATION FOR TEACHING

Programs of study in education for teaching are based upon the assumption that every teacher should have a broad general education, adequate mastery of the content of instruction, and professional competence.

The relative emphasis placed upon each of these aspects of the total education for teaching varies in accordance with the purposes of each program. For instance, elementary school teachers, since they teach all subjects, require content preparation of greater breadth and less specialization than secondary school teachers.

It is the view of the School of Education that an acceptable minimum education for teaching requires not less than four years of full-time study or the equivalent part-time study. For superior preparation teachers are urged to plan for five years of full-time study or the equivalent part-time study.

The student may choose any one of the following three plans to achieve superior educational preparation for teaching:

1. Upon receiving the Bachelor's degree, he may take a teaching position and, after acquiring some professional experience, return to the School for graduate study leading to the Master's degree. This plan enables students with Bachelor's degrees to start earning immediately and, by teaching experience, to illuminate graduate study which will follow. However, by delaying acquisition of the Master's degree the student cannot command the higher salary usually associated with this degree and may prejudice his opportunity for promotion.

2. The student may choose to pursue full-time graduate study leading to the Master's degree immediately after receiving the Bachelor's degree. This plan is of advantage to students who wish to defer the decision to seek a Master's degree until completion of the undergraduate program and to students transferring from other institutions, whose transferred credits fit more readily into this plan than into the five-year



plan discussed below. Both this program and the five-year program enable the student to command a higher beginning salary and be considered for early promotion.

3. For those whose professional aims are established at the beginning of the junior year, the School offers a five-year integrated program of study leading to the Bachelor's and Master's degrees conferred simultaneously. This program permits careful planning from the outset to meet the demands of the teaching position for which the student is preparing; it permits adequate mastery of the content of instruction in two teaching fields; and advances the professional sequence of courses to the fourth and fifth years, thus providing a more adequate academic preparation. Students are advised to choose the five-year program if possible.

## REGULATIONS

*Regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES are stated on pages 15-24; other University regulations, on pages 43-48.*

Fifteen to 17 semester hours of credit constitute a normal program. A student with a quality-point index of 3.00 or higher may, with the permission of the Dean, enroll for 18 or 19 hours. No student may enroll for more than 19, except by permission of the Committee on Scholarship.

### *Amount of Work*

A student employed 15 hours or less a week may carry a normal program of college work.

A student employed from 16 to 25 hours a week may enroll for 12 or 13 hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for 15 or 16 hours.

A student employed from 26 to 34 hours a week may enroll for 9 or 10 hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for 12 or 13 hours.

A student employed 35 hours or more a week may enroll for 6 or 7 hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for 9 or 10 hours.

A student who increases his hours of employment after registration or at any time during a semester must report immediately to the Dean so that his program may be adjusted, if necessary.

## THE BACHELOR'S DEGREES

The School of Education offers programs leading to the degrees of Bachelor of Arts in Education and Bachelor of Science in Physical Education.

The program of each student must be approved by a Faculty adviser. Since each student's program is defined by his particular needs, it is important that the student have a clear concept of his major interest in education, and also that he be familiar with the teaching-certificate requirements of the locality in which he expects to teach.

*Bachelor of Arts in Education and Bachelor of Science in Physical Education.*—The satisfactory completion of the appropriate curriculum in the lower division of Columbian College of Arts and Sciences (see pages 59-60); the equivalent from another accredited higher institu-

### *Entrance Requirements*

tion; or a certificate of graduation from an approved normal school or the equivalent is required. Applicants must have personality traits that give promise of success as a teacher.

### **Requirements for the Degrees**

To be recommended for a degree a student must satisfy the admission, residence, scholarship, and curriculum requirements.

#### **RESIDENCE**

Candidates for the Bachelor's degrees must complete satisfactorily while matriculated in the School of Education a minimum of 30 semester hours, 9 of which, with the approval of the adviser, may be in Off-Campus courses of the College of General Studies.

For full details concerning continuous registration, see page 46.

#### **SCHOLARSHIP**

The system of grading and of computing scholarship is described in detail on pages 43 and 44.

In order to graduate, a student must have a quality-point index of at least 2.00.

*Probation.*—A student who fails to maintain a quality-point index of at least 2.00 is placed on probation. He remains on probation as long as his index is below 2.00, or until his probation is removed by the Committee on Scholarship.

*Suspension.*—A student on probation who fails to raise his index to 2.00 within the time specified may be suspended.

A student suspended for poor scholarship may, within ten days, appeal his case to the Committee on Scholarship through the Dean. If the case appears to be remediable and the student seems likely to improve in his scholarship, the Committee may readmit him on probation. A student denied readmission may again, after the lapse of a calendar year, petition the Committee through the Dean for readmission. A student suspended twice will not be readmitted.

#### **CURRICULUM REQUIREMENTS**

In any of the following curricula at least 30 semester hours must consist of courses numbered above 100.

### **BACHELOR OF ARTS IN EDUCATION**

The objective of programs leading to the degree of Bachelor of Arts in Education is to provide (1) general educational backgrounds; (2) functional command of ideas, concepts, knowledge, and skills in one or more teaching fields; (3) mastery of basic professional information and skills adequate for the beginning teacher; and (4) development of attitudes needed for success in teaching.

The general educational backgrounds needed by prospective teachers are obtained through: precollege education, college courses, work experience, leadership activities, student campus activities, and off-campus cultural opportunities.

Normally, from 60 to 64 semester hours of the total requirement are completed in the lower division of Columbian College of Arts and Sciences of this University or in an equivalent institution elsewhere. (See "Education," page 59.) Since the teaching fields differ in content, scope, and complexity, some programs are longer than others. None requires less than 126 hours of satisfactory work, exclusive of required Physical Education.



*Work experience, leadership activities, participation in student campus activities, and the utilization of off-campus cultural opportunities.*— Obviously, these cannot be prescribed. Nevertheless, they constitute an important part of the general educational background of prospective teachers. In conference with a staff member of the Department of Education assigned as his general adviser, the student is expected to plan adequate experiences in these areas. Not later than one month after matriculation in the School of Education the student must file in the Office of the Dean a statement of such plans approved by his adviser. He must also keep his adviser informed concerning the fulfillment of his plans and to this end include in plans filed, scheduled conferences with his adviser.

Success of the student in enriching his general educational background by these means will be taken into consideration at the end of the first semester of the junior year when the faculty will review the qualifications of candidates to determine any who are not of sufficient promise as prospective teachers to warrant continuation of their candidacies. Success in these activities will also be considered when the list of candidates is again reviewed early in the last semester of the senior year immediately after the results of the National Teacher Examinations are available. In estimating the success of the student in this connection, more weight will be given to evidence of initiative, eagerness to make the most of each experience, balance, and quality of experience than to the number of different experiences.

Although the student is not required to establish a program of non-academic activities until he becomes a degree candidate in the School of Education, he is advised to do so as soon as he enters the University. To this end, he should consult the pre-Education adviser soon after entering. Whatever is accomplished in this connection while in Columbian College of Arts and Sciences will reduce the obligations of the student after admission to the School of Education.

#### NATIONAL TEACHER EXAMINATIONS

All candidates for the degree of Bachelor of Arts in Education are required to take the National Teacher Examinations. Those expecting to graduate in June should take the examinations the previous December or March; those expecting to graduate in February, in July or October. Students expecting to complete degree requirements during the Summer Sessions should take the examinations in March or July.

Students will receive individual reports of test scores and may avail themselves of the regular transcript services of the Educational Testing Service. Students must request the Testing Service to send copies of test scores to the School of Education.

Each senior required to take the National Teacher Examinations must register for them in the Office of the Dean at least thirty days prior to the date of the administration of the examinations. Details concerning time, place, registration, and fees may be obtained in the Office of the School of Education.

#### TEACHING-FIELD PREPARATION

Teaching-field preparation depends upon the kind of teaching position for which the student is preparing. Those planning to teach in elementary schools need a degree of competency in several fields. Those preparing to teach in junior or senior high schools, as a rule, must demonstrate competency in a major teaching field and a minor teaching field. With the approval of the student's adviser, preparation in a



minor teaching field may be omitted in order to permit additional study in the major teaching field. Ordinarily, students preparing to teach in evening schools for adults are required to prove competency in only one teaching field.

The student should begin teaching-field preparation while in the lower division of Columbian College of Arts and Sciences and should make provision for it in planning his program of studies.

Teaching-field requirements include satisfactory completion of prescribed academic courses in one or more fields, a satisfactory score on the special field examination of the National Teacher Examinations,\* and satisfactory completion of the prescribed special methods courses.

Prescribed academic courses vary in number in accordance with the scope and complexity of the teaching field and the license requirements of the various states. Minimum academic course requirements for each major teaching field are listed on succeeding pages. Minor teaching-field requirements are somewhat less than those of a major field. They are determined in conference with an adviser. Students preparing to teach on the elementary level are advised to use free electives to increase their mastery of content in an academic field or an area of specialization, e.g.—Physical Education, etc.

The prescribed course in special methods is concerned primarily with methods of initiating, guiding, and evaluating learning experiences dealing with the content of the teaching field. It attempts to bring to the student specific suggestions drawn from the accumulated experience of successful teachers. However, in addition, the course reviews the teaching-field content currently in use in schools and the examination at the end of the course provides the final test of competency in the teaching field.

### *Prescribed Courses in the Various Teaching Fields*

#### **ART**

	Semester Hours
Art 1: Art Appreciation	3
Art 31-32: Survey of Western Art, or	
Art 71-72: Introduction to the Arts in America	6
<i>Nine semester hours from the following</i>	9
Art 101: Greek and Roman Architecture, or	
Art 102: Greek and Roman Sculpture	
Art 103: Medieval Art	
Art 104: Renaissance Art in Italy I, or	
Art 105: Renaissance Art in Italy II	
Art 106: Renaissance Art in the North	
Art 109: Nineteenth Century Art in Europe	
Art 110: Contemporary Art	
Art 112: Art of Egypt and the Ancient Orient	
Art 113: Baroque Art in Italy, or	
Art 114: Baroque Art in the North	
Art 203: Primitive Art	

\* Special field examinations of the National Teacher Examinations are available in elementary education; early childhood education; biology and general science; English language and literature; industrial arts; mathematics; chemistry, physics, and general science; social studies; physical education; business education; music education; home economics; and art education.

Students preparing to teach history or geography take the special field examination in social studies.

Students preparing to teach in fields in which special field examinations are not available (language and speech) must obtain a satisfactory score on a special field examination given by the instructor in the special methods course involved.

	Semester Hours
<i>Twenty-four semester hours from the following . . . . .</i>	<b>24</b>
*Art 21-22: Basic Design	
Art 35-36: Advertising Design I	
Art 41-42: Drawing I	
Art 51-52: Ceramics I	
Art 57-58: Introduction to Graphic Techniques	
Art 65-66: Painting I	
Art 81-82: Sculpture I	
Art 121-22: Design: Structured	
Art 123-24: Design: Individual Problems	
Art 125-26: Painting II	
Art 127-28: Painting III	
Art 131-32: Ceramics II	
Art 139-40: Design Workshop	
Art 143-44: Serigraphy	
Art 151-52: Ceramics III	
Art 157-58: Relief Printing	
Art 161: Workshop in Ceramics	
Art 165-66: Painting, Drawing, and Composition	
Art 175-76: Design Projects	
Art 179-80: Sculpture II	
Art 189-90: Sculpture III	
<b>Total . . . . .</b>	<b>42</b>

## BIOLOGY

Biological Sciences 1-2: Introductory Biology	8
Biological Sciences 101-2: Invertebrate Zoology	6
Biological Sciences 103-4: Comparative Vertebrate Anatomy	6
Biological Sciences 108: Organic Evolution, or	
Biological Sciences 127: Genetics	3
Biological Sciences 163: Introduction to Human Physiology	3
Biological Sciences: Advanced Botany courses as approved by the adviser	6
Chemistry 11-12: General Chemistry	8
Physics 1-2: General Physics	8
<b>Total . . . . .</b>	<b>48</b>

## BUSINESS EDUCATION

Accounting 1: Introductory Accounting	3
Economics 1-2: Principles of Economics . . . . .	6
Secretarial Studies 51: Correspondences and Communication . . . . .	3

*Additional courses, as prescribed, in one of the following groups:*  
**GROUP 1: SECRETARIAL STUDIES †**

Secretarial Studies 2: Intermediate Typewriting . . . . .	3
Secretarial Studies 12: Intermediate Shorthand and Transcription . . . . .	3
Secretarial Studies 15: Advanced Shorthand, Typewriting, and Transcription . . . . .	3
Secretarial Studies 54: Secretarial Practice	3

\* Prerequisite to all work in studio practice.

† Candidates inadequately prepared for Secretarial Studies 2 or 12 may be required to take Secretarial Studies 1 or 11. In such cases, with the approval of the adviser, credit earned for Secretarial Studies 1 or 11 may be substituted for a teaching field elective.

	Semester Hours
<i>*Additional courses from the following, as approved by the adviser</i>	6
Accounting 2: Introductory Accounting	
Business Administration 101: Introduction to Business	
Business Administration 109: Office Management	
Business Administration 141: Basic Marketing Management	
Business Administration 161: Commercial Law: Contracts, Sales, Agency, and Bailments	
Economics 121: Money and Banking	
Statistics 52: Mathematics of Finance	

Total	30
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**GROUP 2: BOOKKEEPING, BUSINESS ARITHMETIC, AND BUSINESS LAW**

Accounting 2: Introductory Accounting	3
Accounting 111: Financial Statement Analysis	
or Accounting 121: Intermediate Accounting	3
Business Administration 101: Introduction to Business	3
Business Administration 102: Fundamentals of Management	3
Business Administration 161: Commercial Law: Contracts, Sales, Agency, and Bailments	3
Business Administration 162: Commercial Law: Negotiable Instruments, Property, Mortgages	3
Statistics 52: Mathematics of Finance	3

*\*Three semester hours from the following, as approved by the adviser*

Business Administration 121: Risk Management	3
Business Administration 131: Business Finance	
Business Administration 138: Investments	
Economics 121: Money and Banking	

Total	36
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**GROUP 3: DISTRIBUTIVE EDUCATION**

Business Administration 141: Basic Marketing Management	3
Business Administration 142: Marketing Management Problems	3
Business Administration 145: Sales Management	3

*\*Twelve semester hours from the following, as approved by the adviser*

Business Administration 147: Advertising	12
Business Administration 150: Procurement and Materials Management	
Business Administration 158: Traffic Management	
Business Administration 175: Introduction to Foreign Trade	
Business Administration 176: Exporting and Importing	

Total	33
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**CHEMISTRY**

Chemistry 11-12: General Chemistry	8
Chemistry 21: Qualitative Inorganic Analysis	4
Chemistry 22: Quantitative Inorganic Analysis	4
Chemistry 151-52: Organic Chemistry	9
Chemistry 191: History of Chemistry	2
Mathematics 6: Plane Trigonometry	3
Mathematics 21: Calculus I	3
Physics 1-2: General Physics	8

Total	41
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\* Not required for the minor teaching field.



## DANCE

	Semester Hours
Music 103-4: History of Music	6
Physical Education 43-44: Techniques of Physical Education Motor Activities	4
Physical Education 49: Human Anatomy	3
Physical Education 50: Kinesiology	3
Physical Education 53: Creative Dance Techniques and Composition	3
Physical Education 101: Physical Education in the Elementary School	3
Physical Education 107: Teaching Recreational Dance	2
Physical Education 117: Teaching Modern Dance	3
Physical Education 118: Dance Production and Choreography	3
Physical Education 134: Rhythmic Analysis in Relation to Movement	3
Physical Education 135-36: History, Theory, and Philosophy of Dance	6
Speech 166: History of the Theatre	3
Total	42

## ELEMENTARY EDUCATION

Art: As approved by the adviser	3
Geography 51, 52: Introduction to Geography, World Regions	6
History 71-72: Development of the Civilization of the United States	6
Mathematics 9: General Mathematics I	3
Mathematics 10: General Mathematics II	3
Music: As approved by the adviser	3
Physical Education: As approved by the adviser	3
Science: As approved by the adviser	9-12
<i>Six semester hours from the following, as approved by the adviser</i>	6
Anthropology 1-2: Introductory Anthropology	
Economics 1-2: Principles of Economics	
History 39-40: Development of European Civilization in Its World Context	
Political Science 9-10: Government of the United States	
Religion 59-60: History of Religion	
Sociology 1-2: Introductory Sociology	
Total	42-45

## ENGLISH

English 1 or 1x, 2: English Composition	6
English 52: Introduction to English Literature	3
English 71-72: Introduction to American Literature	6
English 125: Introduction to English Linguistics	3
English 135-36: Shakespeare	6
Speech 11: Voice and Diction	3
<i>*Nine semester hours from the following, as approved by the adviser</i>	9
English 109: Expository Writing	
English 151-52: The Romantic Movement	
English 161-62: Victorian Literature	
English 165-66: The 20th Century	
English 170: The American Short Story	
English 171-72: Studies in American Literature	
English 173-74: Major American Poets	
English 175-76: American Drama	
English 177-78: The American Novel	
English 182: The English Novel	
English 183-84: The English Drama	
Total	36

\* Not required for the minor teaching field.

## FRENCH

	Semester Hours
French 9-10: French Conversation and Composition	6
French 51-52: Survey of French Literature and Civilization	6
French 103: Problems of Pronunciation and Intonation	3
French 109-10: Advanced French Conversation and Composition	6
French 125-26: French Literature of the 19th Century	6
French 127-28: French Literature of the 20th Century	6
French: Additional courses as approved	6
<i>*Six semester hours from the following</i>	6
French 119-20: French Literature of the 16th Century	
French 121-22: French Literature of the 17th Century	
French 123-24: French Literature of the 18th Century	
Foreign Language: Other than French as approved	
Art 109: Nineteenth Century Art in Europe	
Art 110: Contemporary Art	
English 125: Introduction to English Linguistics	
History 141-42: History of France	
Psychology 115: Psychology of Language and Communication	
Total	39-45

## GENERAL SCIENCE †

Biological Sciences 1-2: Introductory Biology	8
Chemistry 11-12: General Chemistry	8
Chemistry 21: Qualitative Inorganic Analysis	4
Physics 1-2: General Physics	8
Physics: As approved by the adviser	3
<i>Nine semester hours from the following</i>	9
Mathematics 3: College Algebra	
Mathematics 6: Plane Trigonometry	
Mathematics 21, 22, 23, 24: Calculus I, II, III, IV	
Total	40

## GEOGRAPHY

Geography 51: Introduction to Geography	3
Geography 52: World Regions	3
Geography 103-4: Cartography	6
Geography 105-6: Regional Climatology	6
Geography 145: Psychological Geography	3
Geography 146: World Political Geography	3
Geology 1: Introductory Geology	3
<i>‡Three semester hours from the following</i>	3
Geography 151: United States	
Geography 153: Western Europe	
Geography 154: The Mediterranean	
Geography 155: Africa	
Geography 156: The Middle East	
Geography 161: Latin America	
Geography 164: Communist China	
Geography 165: Eastern and Southeastern Asia	
Geography 166: The Soviet Union	

\* Recommended but not required.

† May not be chosen as a minor teaching field.

‡ Not required for the minor teaching field.

	Semester Hours
*Six semester hours from the following .....	6
Geography 124: Land Capabilities	
Geography 125: Transportation Complexes	
Geography 126: World Economies	
Geography 133: Regional Industrial Structures	
Geography 134: Location of Industry	
Geography 141-42: Urban Settlement	

Total .....	36
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#### GERMAN

German 1-2: First-year German .....	6
German 3-4: Second-year German .....	6
German 9-10: German Conversation and Composition .....	6
German 51-52: Introduction to German Literature .....	6
*German 179-80: Advanced Composition for Undergraduate and Graduate Majors .....	2
*German: Additional courses as approved by the adviser .....	12

Total .....	38
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#### HISTORY

History 39-40: The Development of European Civilization in Its World Context .....	6
History 71-72: The Development of the Civilization of the United States .....	6
History: Research Seminar (see adviser, Department of History)	6
Six semester hours in each of three of the following groups, as approved by the adviser .....	18
*Additional semester hours from any one of the following groups, as approved by the adviser .....	6

#### GROUP 1: AMERICAN HISTORY

History 170: American Colonial History	
History 171-72: Social History of the United States	
History 173: Representative Americans	
History 174: Economic History of the United States	
History 175-76: Political and Constitutional History of the United States	
History 177: The South	
History 181-82: Diplomatic History of the United States	
History 183: Oversea Expansion of the United States	

#### GROUP 2: EUROPEAN HISTORY

History 109-10: Ancient History	
History 111-12: Medieval History	
History 130: Nationalism	
History 131-32: History of Germany	
History 141-42: History of France	
History 145-46: History of Russia	
History 147: Economic History of Europe	
History 149-50: European Diplomatic History	
History 151-52: History of England and Great Britain	

#### GROUP 3: THE EASTERN WORLD

History 145-46: History of Russia	
History 187: History of Modern China	
History 189: History of India	

\* Not required for the minor teaching field.



- History 190: Modern India  
 History 193: History of the Near East  
 History 195-96: History of East Asia

**GROUP 4: LATIN AMERICAN HISTORY**

- History 163: Colonial Latin America  
 History 164: South America since Independence  
 History 166: Mexico and the Caribbean since Independence  
 Political Science 177: Recent Trends in Latin American Politics and Government  
 Political Science 178: International Politics in the Western Hemisphere

Total ..... 42

**MATHEMATICS**

- Mathematics 21, 22, 23, 24: Calculus I, II, III, IV ..... 12  
 Mathematics 122: Introduction to Abstract Algebra ..... 3  
 Mathematics 124: Introduction to Matrix Theory ..... 3  
 Mathematics 127: Foundations of Geometry ..... 3  
 \*Mathematics: Three additional courses in Mathematics, including one in geometry and one in probability and statistics, as approved by the adviser ..... 9  
 Statistics 155: Introduction to Mathematical Probability ..... 3  
 Total ..... 33

**MUSIC**

- Music 3: Music Appreciation ..... 3  
 Music 4: Survey of Music Literature and Forms ..... 3  
 Music 5-6: Music Theory ..... 6  
 Music 104: History of Music—1600 to Present ..... 3  
 Music 131-32: Advanced Music Theory ..... 6  
 Applied Music: Lessons, Voice, or Instrument ..... 12  
 Ensemble: Choral or Orchestral ..... 3  
 Music Literature: Three semester hours as approved by the adviser ..... 3  
*Three semester hours from the following* ..... 3  
 Music 135: Counterpoint  
 Music 137: Orchestration  
 Music 138: Form and Analysis  
 Total ..... 42

**PHYSICAL EDUCATION †**

- Biological Sciences 1-2: Introductory Biology ..... 8  
 Biological Sciences 163: Introduction to Human Physiology ..... 3  
 Physical Education 43-44: Techniques of Physical Education Motor Activities... 4  
 Physical Education 49: Human Anatomy ..... 3  
 Physical Education 50: Kinesiology ..... 3  
 ‡Physical Education 51-52: Teaching Physical Education Activities (women), or  
 ‡Physical Education 115-16: Teaching Team Sports in Secondary Schools (men)... 4  
 Physical Education 107: Teaching Recreational Dance ..... 1  
 §Physical Education 113-14: Practice in Teaching Physical Education Activities (women) ..... 4  
 ‡Physical Education 117: Teaching Modern Dance (women) ..... 1

\* Not required for the minor teaching field.

† May be chosen as a minor field only, for Bachelor of Arts in Education. See pages 99-102 for requirements for the Bachelor of Science in Physical Education.

‡ Required only of those preparing to teach on the secondary school level.

§ Required only of those preparing to teach on the elementary school level.

	Semester Hours
Physical Education 122: Methods and Materials for Health Education.....	3
*Physical Education 138: Organization and Administration of Physical Education.....	3
Total .....	37

### PHYSICS

Physics 1-2: General Physics .....	8
Physics 31-32: Introduction to Theoretical Physics.....	4
Physics 51-52: Introduction to Experimental Physics.....	4
Chemistry 11-12: General Chemistry, or	
Chemistry 12 and 21: General Chemistry and Qualitative Inorganic Analysis..	8
Mathematics 21, 22, 23, 24: Calculus I, II, III, IV.....	12
Physics 161-62: Mechanics I-II .....	6
Physics 165: Electromagnetic Theory .....	3
Physics 167: Modern Physics .....	3
Total .....	48

### RUSSIAN

Russian 1-2 or 5: First-year Russian .....	6
Russian 3-4 or 6: Second-year Russian .....	6
Russian 9-10: Russian Conversation and Composition.....	6
Russian 125: Russian Linguistic Structure.....	3
Russian 126: Comparative Russian-English Linguistic Structure.....	3
† Additional courses chosen from the following with permission of the adviser .....	12
Russian 91-92: Introduction to Russian Literature	
Russian 93-94: Introduction to Slavic (non-Russian) Literature	
Russian 101-2: Readings in Modern Russian	
Russian 103-4: Scientific Russian	
Russian 109-10: Advanced Russian Conversation and Composition	
Russian 141-42: Russian Literature of the 19th Century	
Russian 151-52: Russian Literature of the 20th Century	
Russian 161-62: Russian Culture	
Russian 179-80: Advanced Russian for Undergraduate Majors	
Total .....	36

### SOCIAL STUDIES

History 39-40: The Development of European Civilization in Its World Context .....	6
History 71-72: The Development of the Civilization of the United States .....	6
Political Science 9-10: Government of the United States .....	6
Twelve semester hours from the following .....	12
Anthropology 1-2: Introductory Anthropology	
Economics 1-2: Principles of Economics	
Geography 51, 52: Introduction to Geography; World Regions	
Religion 59-60: History of Religion	
Sociology 1-2: Introductory Sociology	
† Other Courses: Second-group courses, as approved by the adviser, from Anthropology, Economics, Geography, History, Political Science, Religion, and Sociology .....	12
Total .....	42

\* Required only of those preparing to teach on the secondary school level.  
† Not required for the minor teaching field.

## SPANISH

	Semester Hours
Spanish 9-10: Spanish Conversation and Composition.....	6
Spanish 51-52: Survey of Spanish Literature and Civilization.....	6
Spanish 103: Problems of Pronunciation and Intonation.....	3
Spanish 109-10: Advanced Spanish Conversation and Composition.....	6
Spanish 125-26: Modern Spanish Literature.....	6
Spanish 127-28: Contemporary Spanish Literature.....	6
Spanish: Additional Spanish courses as approved.....	6
<i>*Six semester hours from the following.....</i>	
Spanish 121-22: Spanish Literature of the Golden Age	6
Spanish 123-24: Cervantes: Don Quijote	
Spanish 151-52: The Spanish-American Novel	
Spanish 155-56: Spanish-American Literature to 1880	
Spanish 157-58: Spanish-American Literature since 1880	
Foreign Language: Other than Spanish as approved	
English 125: Introduction to English Linguistics	
History 161: Ancient Americans	
History 162: Iberian Background of Latin America	
History 163: Colonial Latin America	
History 164: South America since Independence	
History 166: Mexico and the Caribbean since Independence	
Psychology 115: Psychology of Language and Communication	

Total ..... 39-45

## SPEECH AND DRAMA

Speech 1: Effective Speaking	3
Speech 2: Persuasive Speaking	3
Speech 11: Voice and Diction	3
Speech 32: Oral Reading	3
Speech 101: Phonetics	3
Speech 121: Group Discussion and Conference Leadership	3
Speech 154: Play Direction	3
Speech 171: Introduction to Speech Disorders	3

*One of the following areas of specialization, as approved by the adviser:*

### † GROUP 1: SPEECH ARTS

<i>Twelve semester hours from the following.....</i>	<i>12</i>
Speech 102: Oral Interpretation of Literature	
Speech 126: Public Discussion and Debate	
Speech 153: Acting	
Speech 166: History of the Theater	
Speech 169: Creative Dramatics	
Speech 170: Children's Theater	

### † GROUP 2: SPEECH CORRECTION

<i>Twelve semester hours from the following.....</i>	<i>12</i>
Speech 173-74: Speech Therapy	
Speech 176: Speech Hearing and Language Development	
Speech 177-78: Clinical Practice in Speech Therapy	
Speech 182: Hearing Problems and the Testing of Hearing	
Speech 183-84: Clinical Practice in Hearing Therapy	
Other Courses: English, Human Physiology, Psychology, or Speech, as approved by the adviser	

Total ..... 36

\*Recommended but not required.

† Not required for the minor teaching field.



The basic professional information, skills, and attitudes needed by beginning teachers are provided through a sequence of courses to be taken in the junior and senior years. Lectures and class discussions are closely coordinated with field work. Instruction is differentiated to meet the needs of those preparing to teach on the various levels—elementary school, junior high school, senior high school, and adult.

*Professional Education*

PROFESSIONAL COURSES—SECONDARY		Semester Hours
Education 108: Human Development, Learning, and Teaching		3
Education 112: Educational Measurement, or Statistics 104: Statistics in Psychology and Education		3
Education 123: Society and the School		3
Education 131: Principles and Methods of Secondary School Teaching		3
Education 134: Student Teaching in Secondary Schools		6-9
<i>Three to six semester hours from the following Special Methods courses</i>		3-6
Education 136: Teaching English in Secondary Schools		
Education 137: Teaching Speech		
Education 138: Teaching Social Studies in Secondary Schools		
Education 139: Teaching Art in Secondary Schools		
Education 140: Teaching Mathematics in Secondary Schools		
Education 141: Teaching Latin		
Education 142: Teaching Music in Secondary Schools		
Education 144: Teaching Science in Secondary Schools		
Education 146: Teaching Foreign Languages		
Education 150: Teaching Business Subjects		
Total		21-27

PROFESSIONAL COURSES—ELEMENTARY		
Education 108: Human Development, Learning, and Teaching		3
Education 111: Curriculum and Methods in the Elementary School		15
Education 112: Educational Measurements, or Statistics 104: Statistics in Psychology and Education		3
Education 123: Society and the School		3
Education 135: Student Teaching in Elementary Schools		9
Total		33

**BACHELOR OF SCIENCE IN PHYSICAL EDUCATION FOR MEN\***

There are three curricula leading to this degree. The curriculum in Physical Education with an academic minor is designed to prepare students for teaching positions in smaller schools where it is necessary to teach an academic subject in addition to physical education. The Physical and Health Education curriculum prepares for the teaching of physical and health education in the larger schools. The curriculum in Physical Education and Recreation has been planned for those who wish to be prepared to direct programs of recreation in addition to the teaching of physical education.

**PREREQUISITE**

For the first two years of the Bachelor of Science in Physical Education curriculum, see Columbian College of Arts and Sciences, page 59.

\* Physical Education may also be chosen as a minor teaching field by candidates for the degree of Bachelor of Arts in Education, see pages 96-97.

### Curriculum in Physical Education with an Academic Minor

The minimum requirements for this degree are 66 semester hours, distributed as follows:

#### JUNIOR YEAR

	Semester Hours
Biological Sciences 163: Introduction to Human Physiology .....	3
Education 108: Human Development, Learning, and Teaching .....	3
Education 123: Society and the School .....	3
Physical Education 105: Adapted Physical Education and Physical Examinations .....	3
Physical Education 107: Teaching Recreational Dance .....	1
Physical Education 113-14: Practice in Teaching Physical Education Activities .....	6
Physical Education 121: School and Community Health Programs .....	3
Physical Education 122: Methods and Materials for Health Education .....	3
Physical Education 158: Safety Education: Care of and Responsibility for Athletic Injuries .....	3
Academic Teaching Field: .....	4
Elective: .....	1
<b>Total</b> .....	<b>33</b>

#### SENIOR YEAR

Education 131: Principles and Methods of Secondary School Teaching .....	3
Education 134: Student Teaching in Secondary Schools .....	6-9
Physical Education 103: History and Principles of Physical Education .....	3
Physical Education 115-16: Teaching Team Sports in Secondary Schools .....	4
Physical Education 131: Tests and Measurements in Physical Education .....	3
Physical Education 138: Organization and Administration of Physical Education .....	3
Academic Teaching Field: .....	8-11
<b>Total</b> .....	<b>33</b>

### Curriculum in Physical and Health Education

#### JUNIOR YEAR

Biological Sciences 163: Introduction to Human Physiology .....	3
Education 108: Human Development, Learning, and Teaching .....	3
Education 123: Society and the School .....	3
Physical Education 107: Teaching Recreational Dance .....	1
Physical Education 113-14: Practice in Teaching Physical Education .....	6
Physical Education 121: School and Community Health Programs .....	3
Physical Education 122: Methods and Materials for Health Education .....	3
Physical Education 158: Safety Education: Care of and Responsibility for Athletic Injuries .....	3
Elective: .....	8
<b>Total</b> .....	<b>33</b>

#### SENIOR YEAR

Education 131: Principles and Methods of Secondary School Teaching .....	3
Education 134: Student Teaching in Secondary Schools .....	6-9
Physical Education 103: History and Principles of Physical Education .....	3
Physical Education 105: Adapted Physical Education and Physical Examinations .....	3
Physical Education 122: Teaching Team Sports in Secondary Schools .....	4
Physical Education 131: Tests and Measurements in Physical Education .....	3
Physical Education 138: Organization and Administration of Physical Education .....	3
Elective: .....	5-8
<b>Total</b> .....	<b>33</b>

## Curriculum in Physical Education and Recreation

### JUNIOR YEAR

	Semester Hours
Education 108: Human Development, Learning, and Teaching .....	3
Education 123: Society and the School .....	3
Physical Education 48: Introduction to Recreation .....	2
Physical Education 107: Teaching Recreational Dance .....	1
Physical Education 113-14: Practice in Teaching Physical Education .....	6
Physical Education 121: School and Community Health Programs .....	3
Physical Education 132: Camp Leadership .....	1
Physical Education 151-52: Recreational Leadership Activities .....	6
Physical Education 158: Safety Education: Care of and Responsibility for Athletic Injuries .....	3
Elective: .....	5
Total .....	33

### SENIOR YEAR

Education 131: Principles and Methods of Secondary School Teaching .....	3
Education 134: Student Teaching in Secondary Schools .....	6-9
Physical Education 103: History and Principles of Physical Education .....	3
Physical Education 122: Methods and Materials for Health Education .....	3
Physical Education 131: Tests and Measurements in Physical Education .....	3
Physical Education 138: Organization and Administration of Physical Education .....	3
Physical Education 161: Community Organization for Recreation .....	3
Physical Education 162: Administration of Community Recreation Programs .....	3
Elective: .....	3-6
Total .....	33

## BACHELOR OF SCIENCE IN PHYSICAL EDUCATION FOR WOMEN

The Physical Education major curriculum is designed to prepare students for teaching in elementary and secondary school programs of physical education.

Within this curriculum there is opportunity for specialization in dance, corrective physical education, health education, and recreation.

The student wishing to prepare to teach another subject in addition to physical education may do so by using her elective hours to work toward a minor teaching field. Relevant work completed in Columbian College of Arts and Sciences may be counted.

### PREREQUISITE

For the first two years of the Bachelor of Science in Physical Education curriculum, see Columbian College of Arts and Sciences, pages 59-60.

### JUNIOR YEAR

Biological Sciences 163: Introduction to Human Physiology .....	3
Education 108: Human Development, Learning, and Teaching .....	3
Education 123: Society and the School .....	3
Physical Education 105: Adapted Physical Education and Physical Examinations .....	3
Physical Education 107: Teaching Recreational Dance .....	1
Physical Education 111-12: Teaching Physical Education Activities .....	4



	Semester Hours
Physical Education 117: Teaching Modern Dance	1
Physical Education 118: Dance Production	1
Physical Education 121: School and Community Health Programs	3
Physical Education 122: Methods and Materials for Health Education	3
Physical Education 132: Camp Leadership	1
Elective or minor teaching field:	8
<b>Total</b>	<b>34</b>

#### SENIOR YEAR

Education 131: Principles and Methods of Secondary School Teaching	3
Education 134: Student Teaching in Secondary Schools	6-9
Physical Education 101: Physical Education in the Elementary School	3
Physical Education 103: History and Principles of Physical Education	3
Physical Education 113: Practice in Teaching Physical Education Activities	3
Physical Education 131: Tests and Measurements in Physical Education	3
Physical Education 138: Organization and Administration of Physical Education	3
Elective or minor teaching field:	5-8
<b>Total</b>	<b>32</b>



## THE DEGREE OF MASTER OF ARTS IN EDUCATION

Programs of study leading to the degree of Master of Arts in Education are designed to enable prospective teachers and teachers of experience to increase their knowledge of professional and academic information and skills, prepare for special types of educational service, and provide opportunities for graduates of liberal arts or other nonteacher education institutions to acquire needed professional education.

From the various related departments of the University, the student and his adviser select courses to give the student an adequate background in his chosen field of service. The prospective high school or junior high school teacher will ordinarily include study in the subject which he is planning to teach as well as in professional education.

Programs for teachers-in-service and experienced teachers planning to re-enter the profession are differentiated from those for students without teaching experience. Additional information concerning these programs may be obtained by writing or telephoning to the Dean.

Graduate programs of study are available in the following fields:

(1) adult education, (2) classroom teaching—to include strengthening mastery of teaching field, (3) comparative education, (4) curriculum, (5) elementary education, (6) employee training, (7) guidance, (8) health education, (9) history of education, (10) human growth and development, (11) philosophy of education, (12) physical education, (13) reading, (14) school administration, (15) secondary education, (16) special education, (17) student personnel work in higher education.

### FIVE-YEAR PROGRAM

A candidate entering the School of Education from the lower division of Columbian College of Arts and Sciences (or with equivalent preparation) may choose a three-year program leading to the degrees of Bachelor of Arts and Master of Arts in Education to be conferred simultaneously. The first year of this combined program will be devoted to teaching-field preparation; the work of the second year will include the Bachelor of Arts junior-year professional courses and a maximum of 18 semester hours of graduate courses; that of the third and final year, senior-year undergraduate professional courses and the remaining graduate courses needed for the Master's degree. Student Teaching, to be elected in the third year, may not be taken for graduate credit. A quality-point index of at least 2.50 in undergraduate courses must be attained before beginning the work of the senior year and the program must meet all the requirements for the degrees of Bachelor of Arts and Master of Arts in Education.

A Bachelor's degree from an accredited institution; an undergraduate quality-point index of 2.50 or above (C+ average); demonstrated interest in teaching; and personality traits that give promise of better-than-average success as a teacher.

Two years of successful teaching are required for admission to the fields of guidance and school administration before admission to candidacy.

### ADMISSION TO CANDIDACY

Candidates whose undergraduate preparation does not include equivalents of the basic requirements of the degree of Bachelor of Arts in Education must make up deficiencies and may be required to take designated tests.

### *Entrance Requirements*

#### ADVANCED STANDING

For the record, advanced standing is granted for approved courses taken at other accredited institutions, but a minimum of 30 semester hours must be completed at this University as a matriculated candidate for the degree.

Advanced courses completed in this University in excess of the requirements for the Bachelor's degree may be credited toward the Master's degree to the extent of 12 semester hours, if the work fits in with the student's plan of specialization and is approved in writing by the Dean before being undertaken.

Advanced standing is not granted for work completed five or more years before application for admission or readmission to Master's candidacy.

#### *Requirements for the Degree*

##### PLAN OF STUDY

The plan of study leading to the degree of Master of Arts in Education requires a minimum of 33 hours of graduate credit. The plan may, at the student's option, include a thesis carrying 6 hours of graduate credit. Whether or not a student selects the thesis option, a minimum of 18 hours, including a course in educational research methods and procedures, must be from courses planned primarily for graduate students (third-group courses). A minimum of 12 hours, not including the thesis or the research course, must be from courses offered by the Department of Education.

Programs may include additional teaching-field preparation. In such cases, however, undergraduate and graduate courses combined must be at least equivalent to the undergraduate requirements for the degree of Bachelor of Arts in Education (see pages 88-99).

Programs are planned initially in conference with an admission adviser in the Office of the School of Education and subsequently with a designated adviser in the candidate's area of specialization. They take into consideration the interests of the candidate, the previous background, certification requirements of the state and locality in which he plans to teach.

All degree requirements must be completed within a period of six years after admission to study.

##### RESIDENCE

The satisfactory completion of 30 semester hours while a matriculated candidate for the degree is required. With the approval of the adviser, 9 of the 30 hours may be off-campus courses in the College of General Studies.

##### SCHOLARSHIP

For graduate work grades are indicated as: *A*, excellent; *B*, satisfactory (graduate level); *C*, passing; *F*, failing; *I*, incomplete; *W*, authorized withdrawal; *CR* indicates credit.

A quality-point index of 3.00 is required for graduation. Students who receive the grade of *C* in more than two courses are subject to suspension. Students who receive a grade of *F* must confer with the Dean of the School of Education before enrollment for further work.

Whenever a grade has not been assigned, the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *I* indicates that a satisfactory explanation has been given to the instructor for the student's failure to complete the required work of the course. An "incomplete" cannot be made up after the lapse of one calendar year except by written permission of the Dean's Council. An



incomplete which is not removed within one calendar year is automatically changed to an *F*. An incomplete cannot be removed by reregistering for the course.

#### THE THESIS

If a candidate selects the thesis option, the thesis must conform to standards prescribed. A statement of these standards may be obtained at the Office of the Dean.

The choice of the thesis subject must be approved in writing by the student's adviser and filed in the Office of the Dean no later than the date announced in the University calendar. Printed copies of detailed regulations regarding the form and reproduction of the thesis are available in the Office of the Dean.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. The student must, however, maintain continuous registration during this period. If the preparation of the thesis extends beyond the two-year period he must register for the entire 6 hours of thesis again and pay tuition on the same basis as for a repeated course.

#### COMPREHENSIVE EXAMINATION

In addition to the course examinations, the candidate must pass a comprehensive examination in two parts: (1) a general three-hour examination concerned with an integrated understanding of the foundations of professional education, and (2) a special three-hour examination concerned with the candidate's area of specialization. Candidates for the examination must be registered for the semester it is to be taken, and must file a written application in the Office of the School of Education not later than thirty days prior to the date of the examination.

#### THE DEGREE OF EDUCATION SPECIALIST

For students who have completed the requirements for a Master's degree in Education and who seek further preparation toward a specific professional objective, the School of Education provides a program of advanced study leading to the degree of Education Specialist. This degree is now available only in the fields of administration and guidance, but programs in other specialties are projected.

The degree of Master of Arts in Education from this University, or the equivalent: a satisfactory score on the Graduate Record Examination; and two years of successful pertinent experience.

*Entrance  
Requirements*

Each applicant must be interviewed and recommended for admission by a staff member of the Department of Education or by a representative in the candidate's locality appointed by the Dean of the School of Education.

*Admission to  
Candidacy*

The applicant who is unable to meet the entrance requirements may be admitted with deficiencies to be met by satisfactorily completing prerequisites in addition to the specified program of graduate study.

Scholarship requirements for the degree of Education Specialist are the same as those for the degree of Master of Arts in Education, see pages 104 and 105.

*Scholarship*

*Programs  
of Study  
and Degree  
Requirements*

Individual programs are developed, through the faculty-adviser plan, to fit the candidates' abilities, interests, needs, and career goals. Thirty semester hours of work beyond the requirements of the degree of Master of Arts in Education at The George Washington University are required. At least 21 hours of this work must be taken on campus at this University. A maximum of five calendar years is allowed for completion of the program of study.

At least 12 of the required 30 hours must be in graduate courses in Education selected as appropriate from the following areas of study: (1) foundations and cognate study, (2) background and general principles of the field of study, (3) an area of specialization within the field of study.

**THE COMPREHENSIVE EXAMINATION**

Successful completion of two three-hour examinations is required.

**THE ORAL EXAMINATION**

The final oral examination must be passed at least three weeks before the degree is to be conferred. The examination is conducted by a committee consisting of members of the staff of the Department of Education and at least one successful practitioner in the appropriate area of specialization, appointed by the Committee on Graduate Studies of the School of Education.

**THE DEGREE OF DOCTOR OF EDUCATION**

The School of Education offers programs of advanced study leading to the degree of Doctor of Education. These programs are under the supervision of the Committee on Graduate Studies and provide opportunities for study leading to the following professional objectives: school superintendent, secondary school principal, elementary school principal, supervisor, director of guidance, director of curriculum development, professor of education, specialist in educational research, employee training, or adult education. All programs require study of interrelated areas of education as well as a doctoral dissertation in the major field of study.

Each program is divided into two parts. The first consists of preparation for and the passing of comprehensive examinations in each of four supporting fields and a major field of study. The second is composed of research investigation and the writing of a dissertation in the major field of interest and culminates in the final oral examination.

*Admission*

The applicant must possess adequate preparation for advanced study including graduate work in fields prerequisite to his objective equivalent to that required for the degree of Master of Arts in Education at this University, at least three years of successful pertinent educational experience, acceptable personal qualities, and a capacity for creative scholarship and effective leadership.

The applicant first arranges for an interview with the Assistant Dean for advanced graduate studies to explore his needs in relation to the resources of the School of Education and to provide the guidance needed to proceed with an application for advanced study.

To be admitted to study for the degree, the applicant must be accepted by the Committee on Graduate Studies on the basis of (1) his previous scholastic and professional record; (2) the results of prescribed admission tests including the Aptitude Test of the Graduate Record Examination; (3) individual evaluation through personal



conferences with at least three faculty members including the major professor under whom the applicant wishes to pursue his work; and (4) the outcome of a group interview with the Committee on Graduate Studies.

The responsibility for selection of supporting and major fields rests with the candidate. Each applicant when he appears before the Committee on Graduate Studies should be prepared to present an outline of his plan of study including the selection of major and supporting fields and the tools of investigation needed for the completion of a doctoral dissertation. The tools may include one foreign language or more, statistical methods, or historical criticism. Candidates with less preparation than that normally required for a Bachelor's and Master's degree in Education must make up their deficiencies either prerequisite to or as part of their graduate work.

### *Committee on Graduate Studies*

The requirements for the degree of Doctor of Education cannot be stated in semester hours, but they consist in general of at least two to three years of full-time work, or the equivalent in part-time work, beyond the degree of Master of Arts in Education. Upon admission to study for the first part of a doctoral program the applicant is assigned to a Committee which prescribes and directs his studies. The Committee is composed of professors who will direct the student's work in the major and four supporting fields. Preparation for and the passing of supporting field examinations precedes preparation for and taking the final examination in the major field.

### *Major and Supporting Field Examinations*

A student is required to consult individually with supporting and major field professors in order to determine the requirements for each field of study and to receive guidance in preparation for each examination. Supporting field examinations are written and are six hours in length. The major field examination is twelve hours in length, six hours on each of two successive days. Upon satisfactory completion of all supporting and major field examinations the student, upon recommendation of the Committee on Graduate Studies, is permitted to pursue the second part of his doctoral program.

The student permitted to continue the second part of a doctoral program is assigned to a Master in Research, generally the major field adviser. Throughout the remainder of the program, the candidate is responsible solely to his Master in Research. Two additional faculty members assist the Master in reading the first draft of the candidate's dissertation. When the dissertation is considered acceptable, the Master recommends the candidate to the Dean for the final oral examination.

### *The Dissertation and the Final Examination*

The final oral examination must be passed at least three weeks before the degree is to be conferred. The examination is conducted by a committee of the Faculty appointed by the Dean, supplemented by at least two leaders in the candidate's field of study from outside the University. The examination is open to the public. Candidates who successfully pass the oral examination are recommended for the degree by the Faculty of the School of Education.

All the preparation for the degree must be done in residence. The student must maintain "continuous registration" in the School of Education, except when the Committee on Graduate Studies has granted a leave of absence. Failure to maintain "continuous registration" in each semester of the academic year may result in lapse of candidacy. Subsequent readmission is subject to whatever new conditions and regulations have been established by the Committee on Graduate Studies.

### *Residence and Continuous Study*



There is no formal regulation concerning the minimum amount of time to be spent in preparation for the minor and supporting field examinations or as a candidate engaged in doctoral research. The supporting and major field examinations, however, must be completed within five years of the date of admission and the entire program must be completed within eight years, regardless of full-time or part-time study. Each candidate is required to complete one semester or more of his program in full-time study. Full-time study of six weeks or more in each of two Summer Sessions is equivalent to full-time study for one semester.

## Special Programs and Services

### Special Program in Elementary Teacher Education

For six years, beginning with 1963-64, the School of Education will offer an intensive fifth-year program designed to prepare outstanding graduates of accredited liberal arts colleges for teaching in elementary schools. This program is supported by a grant from The Ford Foundation. Successful fulfillment of its requirements provides the professional courses necessary for certification as an elementary teacher. Students may elect (1) to receive the degree of Master of Arts in Teaching on completion of the program or (2) to receive credit for 15 semester hours of graduate work toward the degree of Master of Arts in Education.

Limited tuition aid is available. Grants-in-aid, in amounts justified by need, are awarded to candidates by the Selection Committee. See "Special Program in Elementary Teacher Education," page 35.

#### *Admission to the Program*

To be admitted as a student-intern, an applicant must (1) have a Bachelor's degree from an accredited liberal arts institution, including courses which will meet the general education requirements for teacher certification, (2) show evidence of interest in children and a sincere desire to teach, (3) submit three written references attesting to quality of academic record and personality, (4) submit a score on the Aptitude Test of the Graduate Record Examination, and (5) be interviewed by the University Selection Committee, or under arrangements specified by the Committee and approved by the Dean of the School of Education.

#### *Plan of Study*

The program of study begins with a six-week summer session and continues through the first twelve weeks of the fall semester. Course work during this time is planned to help each student gain understanding of (1) the characteristics of elementary school children, (2) the subject-matter areas of the elementary school curriculum, (3) basic dimensions of teaching methodology, (4) the relationship between educational theory and methods, (5) educational tests and measurements, and (6) the role of the school in American society.

During the last six weeks of the fall semester, students will be given full-time student teaching assignments in a near-by public school. This part of the program will permit the student to use, in an actual teaching situation, the educational theories and methods which he has been studying. It is accompanied by a weekly on-campus seminar.

A salaried internship during the spring semester in one of the co-operating school systems in the area gives the student an opportunity to assume the responsibilities of a beginning teacher, with the help and guidance of University and public school staff members. Seminar

meetings will be scheduled weekly for discussion of common problems and for cooperatively planned work on individual and group needs of interns.

### **Education of Teachers of Mentally Retarded Children**

The School of Education offers a program for the education of teachers of mentally retarded children. The program includes Education 180, 181, 185, 186, 189, 244, 246, and appropriate related courses. Laboratory experiences will be arranged in schools for mentally retarded children in the metropolitan area. Students will be accepted at the senior-year undergraduate, Master's, Education Specialist, and Doctoral levels. By special permission, teachers, school administrators, and adequately prepared students from other schools and colleges of the University may elect these courses.

Inquiries concerning the program and the availability of scholarships and fellowships should be directed to the Program Director, Dr. Perry Botwin, The School of Education, The George Washington University, Washington, D.C. 20006.

### **Certification Curricula**

The School of Education provides special curricula for liberal arts graduates and for housewives and retired military personnel with appropriate degrees who wish to prepare for teaching. Those seeking certification through completion of a program of teacher preparation approved by the National Council for Accreditation of Teacher Education but who do not wish to work for a degree, may enroll in a certification program if they meet the admission, scholarship, and personality requirements of degree candidates. The School also provides a wide range of courses of interest to teachers who wish to renew licenses. See "Application for Admission."

### **Reading Center**

The George Washington University Reading Center offers both diagnostic and corrective work for small groups or individuals and reading improvement classes for high school and adult students. All courses are designed to meet particular individual needs whether on a remedial basis or for accelerated reading comprehension.

## **Faculty and Staff of Instruction\***

*Professors* J.G. Allee, Jr., G.L. Angel, Perry Botwin, H.F. Bright, Elizabeth Burtner, W.T. Carroll, J.T. Dailey (*Research*), V.J. DeAngelis, F.N. Hamblin, R.G. Hanken, Thelma Hunt, C.E. Leese, W.A. McCauley, G.E. McSpadden, W.H. Myers, C.W. Pettit, B.S. Root, Carol St. Cyr, Kathryn Towne

*Professorial Lecturers* Bertice Cornish, D.D. Darland, R.A. Edelfelt, Jean Ervin, M.H. Fouracre, J.B. Holden, H.O. Johnson, H.H. Kempfer, J.C. Lang, Anthony Marinaccio, R.D. Merrick, Ruth Newman, Madaline Remmlein, J.F. Rogers, J.P. Walsh, F.E. Wellman, H.M. Wilson

\* Professors, Associate Professors, Assistant Professors, and Instructors (full-time) constitute the Faculty. Faculty and Staff of Instruction for the Academic year 1964-65.

*Associate Professors* R.E. Baker, Mary Coleman, H.G. Detwiler, R.W. Eller, Lyndale George, Eva Johnson, Virginia Kirkbride, Martha Rashid, Jeanne Snodgrass, Loretta Stallings, J.W. Suber, S.R. Westerlund

*Associate Professorial Lecturers* W.E. Amos, Marcella Bernstein, Beverly Crump, Sylvia Gerber, Irene Hypps, Christine Kehne, Nicholas Long, C.O. McDaniels, Helen Mitchell, Eugenia Nowlin, Katherine Scrivener, J.D. Shirley, W.D. Thompson, LuVerne Walker

*Assistant Professors* J.G. Boswell, Gayle Clapp, R.A. Dearden, Gloria Horrworth, Margaret Kiley, Margaret McIntyre, C.A. Neyman (*Research*), Joanne Parker, R.L. Williams

*Assistant Professorial Lecturers* Pat Abernethy, Amelia Carew, J.D. Gates, David Iwamoto, Helen Jacoby, F.W. Kovacs, R.J. Kubalak, Shirley McCune, Clarke Trundle

*Instructors* Donna Abbey, Kathleen Mason, Margaret Moss, C.B. Reed, Nan Smith

*Instructors (part-time)* J.V. Camp, V.D. Elder, Mabel McEwan, W.J. Reinhart

#### FIELD STUDIES

*Director* M.H. Jessup, *Assistant Director* J.F. Lobuts

#### FIELD SERVICE COORDINATORS

Mary Marcé, *Assistant Principal, Dean of Girls, Wakefield High School, Arlington, Va.*; C.M. Richmond, *Principal, Stratford Junior High School, Arlington, Va.*

#### COMMITTEES\*

##### THE DEAN'S COUNCIL †

1965: Eva Johnson, W.H. Myers  
1966: W.T. Carroll, Carol St. Cyr  
1967: H.G. Detwiler, Margaret McIntyre

##### COMMITTEE ON GRADUATE STUDIES †

F.N. Hamblin (*Chairman*), G.L. Angel, R.E. Baker, W.T. Carroll, H.G. Detwiler, Thelma Hunt, Virginia Kirkbride, W.A. McCauley, Martha Rashid, B.S. Root, Carol St. Cyr, J.W. Suber, S.R. Westerlund, R.L. Williams

##### COMMITTEE ON ADMISSION AND ADVANCED STANDING ‡

F.N. Hamblin (*Chairman*), W.H. Myers, B.S. Root, J.Y. Ruth, Loretta Stallings, Kathryn Towne

##### COMMITTEE ON SCHOLARSHIP

B.S. Root (*Chairman*), V.J. DeAngelis, Loretta Stallings, Kathryn Towne

\* The Dean and Assistant Deans of the School of Education are ex officio members of all committees.

† Elected by the Faculty.

‡ Appointed by the Dean.



## SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS

*Acting Dean (beginning February 1, 1965) H. F. Bright*  
*Assistant Deans L. W. Williams, J. C. Dockeray (Programs in*  
*Government and Business), H. M. Stout (Programs*  
*in International Affairs)*

### GENERAL INFORMATION

THE SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS was established in 1898 as the School of Comparative Jurisprudence and Diplomacy. In 1928 it was reorganized and broadened as the School of Government. During the next two decades the scope of the School broadened further with the addition of programs in business administration and public administration. In the same period the School gradually changed from primary emphasis on undergraduate study to emphasis on graduate work. In 1960 the name was changed to the School of Government, Business, and International Affairs and the programs were reorganized in recognition of the growing interdependence of business and government at both the national and international levels. The programs in Government and Business include examination of administrative principles and the quantitative approaches to decision making common to both business and government. These programs stress the points at which major policy decisions of either business or government must give consideration to related policy decisions of the other. Emphasis is placed upon the fact that management education is not limited to organizational techniques but is, in its broadest sense, education for management responsibility.

International Affairs is an area of higher education in which programs have been offered by the School of Government, the predecessor of the present School, since its inception. These programs, based on the fundamentals of economics, history, politics, and law, also give recognition to the international impact of American business activity.

Students in the freshman and sophomore years are registered in the lower division of Columbian College of Arts and Sciences, the liberal arts college of the University. Here they are assigned special advisers from this School to assist them in planning their programs.

**Academic Programs** Programs in the fields of Accounting, Business Administration, Business and Economic Statistics, Health Care Administration, Public Affairs, Public Administration, Economic Policy, Personnel Administration, Urban Affairs, International Affairs, and Sino-Soviet Affairs are all available within the School of Government, Business, and International Affairs. Relevant courses in any of these fields are available to all students regardless of the field in which they are majoring. For example, a student majoring in International Affairs may, with approval of his adviser, include courses in Administration, or a student majoring in Public Administration may include relevant courses in the field of International Affairs.

**Objectives** The School of Government, Business, and International Affairs offers programs to prepare men and women for careers in the conduct of public and international affairs, as well as programs to equip students for eventual senior administrative responsibility in government and business. The development of mid-career programs for executives has become a further objective of national significance.

## REGULATIONS

*Regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES are stated on pages 15-24; other University regulations, on pages 43-48.*

**Attendance** A student may not attend classes until registration is completed and fees due are paid. A student may be dropped from any course for undue absence.

The student is held responsible for all the work of the courses in which he is registered, and all absences must be excused by the instructor in charge before provision is made for him to make up the work missed.

A student suspended for any cause may not attend classes during the period of suspension.

**Independent Study Plan** A student of *demonstrated capacity*, with a special interest in the subject matter of a course, may be permitted to undertake study under the personal direction of an instructor, in accordance with the rules of the appropriate department. Credit under this plan is limited to the specific course credits normally allowed when taken on a class basis.

## The Bachelor's Degrees

The School offers programs leading to (1) the degree of Bachelor of Arts in Government in the fields of International Affairs and Public Affairs and (2) the degree of Bachelor of Business Administration in the fields of Accounting, Business Administration, and Business and Economic Statistics.

The major in International Affairs is administered by the Faculty of Programs in International Affairs; the majors in Accounting, Business Administration, Business and Economic Statistics, and Public Affairs are administered by the Faculty of Programs in Government and Business.

### ENTRANCE REQUIREMENTS

*Bachelor of Arts in Government.*—The satisfactory completion of the *International Affairs* or *Public Affairs* curriculum in the lower division of Columbian College of Arts and Sciences (see pages 60 and 61), or the equivalent.

*Bachelor of Business Administration.*—The satisfactory completion of the *Accounting and Business Administration* or the *Business and Economic Statistics* curriculum in the lower division of Columbian College of Arts and Sciences (see pages 60 and 61), or the equivalent.

### THE REQUIREMENTS FOR THE DEGREES

A full-time student not on probation may not ordinarily take more than 15 semester hours. A student employed more than 24 hours a week, who is not on probation, may not take more than 9 semester hours. *Amount of Work*

A full-time student whose quality-point index is 3.50 or higher may take not more than 18 semester hours. A student employed more than 24 hours a week, whose index is 3.50 or higher, may take up to 12 semester hours.

A student who accepts employment after registration or at any time during a semester must report immediately to the Dean, so that his program may be adjusted if necessary.

Exception to these rules will require the approval of the Dean.

In order to graduate, a student must have the following: (1) a general quality-point index of at least 2.00 and (2) an index in his major of at least 2.50. The major includes the required courses and courses taken in the group options. *Scholarship*





#### DEAN'S HONOR LIST

The names of students who achieve a quality-point index of 3.50 or higher are placed on the Dean's Honor List for that semester. Appearance on the List will be limited to (1) full-time students registered for a minimum of 12 semester hours and (2) part-time students registered for a minimum of 12 semester hours over a period of two consecutive semesters, which may include a summer term.

#### PROBATION

A student whose quality-point index falls below 2.00 after completing a minimum of 12 semester hours of study, will be placed on probation. This probation extends over the period in which the student attempts 12 semester hours of work which may include remedial studies as prescribed.

#### SUSPENSION

A student whose quality-point index is 1.50 or below or whose index remains below 2.00 at the end of his probationary period may be suspended. A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. To be considered for readmission, he must pass prescribed tests and submit evidence to the appropriate Dean's Council that during his absence from the University he has so conducted himself as to indicate that he will profit by readmission. A student readmitted after suspension is on probation and must maintain a current quality-point index of at least 2.50 on each 12 semester hours of work undertaken until his cumulative index is 2.00. In no case will the probationary period after readmission exceed 24 hours of study. A student suspended twice for poor scholarship will not be readmitted.

*Residence* A minimum of 30 semester hours, including at least 12 hours in the major field, must be completed while registered in the School of Government, Business, and International Affairs. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer work may be counted toward the residence requirement, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior or final year must be completed in the School of Government, Business, and International Affairs.

*Graduate Record Examination* All candidates for Bachelor's degrees are required to take two parts of the Graduate Record Examination. The examinations are conducted by the University twice a year: the Fall Testing Session for seniors graduating in February, and the Spring Session for those graduating in June. Students expecting to complete degree requirements during the Summer Sessions should take the examination in the Spring Session.

By special permission seniors who expect to graduate in June may take the Graduate Record Examination at the previous Fall Testing Session, so as to have transcripts available early in the year when applying for admission to graduate schools. Dates of the examinations are announced in the *Schedule of Classes*.

Each senior required to take the Graduate Record Examination must register for it in the office of the Dean when he registers for his final regular semester of study (excluding summer sessions). A \$10 examination fee is payable at the time of registration.

Students will receive individual reports of test scores and may avail

themselves of the regular transcript services of the Educational Testing Service.

Any student whose written or spoken English in any course is unsatisfactory may be reported by the instructor to the Dean. The Dean may assign supplementary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed for failure to make up any such deficiency in English to the satisfaction of the Dean.

*Use of Correct English*

Students wishing to study abroad must consult with their advisers and the Dean, because arrangements must be made on an individual basis. Students of international affairs are encouraged to travel and study abroad.

*Study Abroad*

Credit for correspondence or home-study courses is not acceptable and cannot be applied toward a degree.

*Correspondence and Home-study Courses*

To be recommended by the Faculty for graduation, candidates are required to complete, in addition to the appropriate freshman and sophomore work, a minimum of 60 semester hours during the junior and senior years, as set forth in one of the following curricula.

*Curriculum Requirements*

#### EXAMINATIONS FOR WAIVING CURRICULUM REQUIREMENTS

A required course may be waived by the satisfactory passing of a waiver examination authorized and prescribed by the department or curriculum adviser concerned. Passing this examination does not entitle the student to any hours of credit toward the degree. Request to take the examination should be made to the curriculum adviser and the required fee paid at the Office of the Cashier before the date set for the examination.

## BACHELOR OF BUSINESS ADMINISTRATION

Programs leading to the degree of Bachelor of Business Administration are offered in the fields of Accounting, Business Administration, and Business and Economic Statistics.

For the first two years of the Accounting curriculum, see page 60.

*Accounting*

Programs are offered in three areas of professional specialization: (1) Managerial Accounting in Business; (2) Federal Financial Management—Accounting and Budgeting; and (3) Public Accounting.

#### *Required—Junior and Senior Years*

- Acct 101: Cost Accounting, 3 credits
- Acct 121-22: Intermediate Accounting, 6 credits
- Acct 161: Income Tax Accounting, 3 credits
- Acct 171: Auditing, 3 credits
- B Ad 102: Fundamentals of Management, 3 credits
- B Ad 131: Business Finance, 3 credits
- B Ad 161: Commercial Law: Contracts, Sales, Agency, and Bailments, 3 credits
- B Ad 162: Commercial Law: Negotiable Instruments, Property, Mortgages, 3 credits

Econ 121: Money and Banking, 3 credits	
Area of Professional Specialization: 15 credits	
Elective: Exclusive of Accounting courses, not more than 6 hours may be taken in a single department, 15 credits	
Total, 60 credits	

All Accounting majors must complete the *required* courses listed above, plus one of the following areas of professional specialization. Special programs and elective courses may be arranged in consultation with the department of Government and Business.

#### GROUP I: MANAGERIAL ACCOUNTING IN BUSINESS

Students preparing for careers in managerial accounting in business may specialize in a particular area of accounting, such as systems, budgeting, or income tax, or may concentrate on broadening their backgrounds in business administration or in more general fields of knowledge. The Managerial Accounting program thus provides maximum flexibility for students who wish to combine basic training in accounting with other career interests, in preparation either for general business responsibilities or in preparation for more specific careers in the financial management field.

Courses relating to Managerial Accounting selected with the approval of the adviser (may not include Accounting courses in excess of 9 hours), 15 credits.

#### GROUP II: FEDERAL FINANCIAL MANAGEMENT—ACCOUNTING AND BUDGETING

Students preparing for careers in financial management in the Federal Government may combine basic professional training in accounting with more specialized training in the financial management techniques used in administering the complex affairs of modern-day government. A flexible program can be developed in keeping with the specific career objectives of the individual student by the careful selection of electives.

Courses relating to Federal Financial Management to be selected with approval of the adviser (may not include Accounting courses in excess of 9 hours), 15 credits.

#### GROUP III: PUBLIC ACCOUNTING

The Public Accounting Program is a concentrated professional curriculum designed to prepare students for careers in public accounting. It combines the maximum number of professional accounting courses consistent with the broad educational background essential to successful Accounting careers in the modern business world.

Courses relating to Public Accounting to be selected with approval of the adviser, 15 credits.

*Business Administration* For the first two years of the Business Administration curriculum, see page 60.

The program in Business Administration is designed to provide the broad foundation required for eventual top leadership in either governmental or business administration. The following 30 semester hours are normally required of all candidates for the degree of Bachelor of Business Administration except those specializing in foreign commerce. For the program in foreign commerce, see pages 120–21. In addition students take 15 semester hours in one of the group options and 15 hours of electives, which normally are advanced courses in liberal arts subjects.



## **In All Fields Except Foreign Commerce**

### *Required—Junior and Senior Years*

- Acct 193: Business Budgeting, 3 credits
- B Ad 101: Introduction to Business, 3 credits
- B Ad 102: Fundamentals of Management, 3 credits
- B Ad 105: Personnel Management, 3 credits
- B Ad 131: Business Finance, 3 credits
- B Ad 141: Basic Marketing Management, 3 credits
- B Ad 161: Commercial Law: Contracts, Sales, Agency, and Bailments, 3 credits
- B Ad 162: Commercial Law: Negotiable Instruments, Property, Mortgages, 3 credits
- B Ad 198: Case Problems in Management, 3 credits
- Econ 121: Money and Banking, 3 credits
- Group Option: To be selected from one of the following groups, 15 credits
- Elective: To be selected in consultation with the adviser, 15 credits

Total, 60 credits

### **Group Options**

Nine areas of specialization are open to Business Administration majors. The 15 hours taken in each of these options require the approval of the adviser. The group option and the individual courses within the option should be selected *no later than the beginning of the second semester of the junior year.*

#### **GROUP I: GENERAL BUSINESS**

The following courses provide the basic academic foundation for general administrative and supervisory positions.

- Acct 101: Cost Accounting, 3 credits
- Acct 121-22: Intermediate Accounting, 6 credits
- B Ad 107: Labor-Management Contracts, 3 credits
- B Ad 109: Office Management, 3 credits
- B Ad 113: Real Estate, 3 credits
- B Ad 118: Introduction to Data Processing, 3 credits
- B Ad 119: Data Processing Programming, 3 credits
- B Ad 121: Property and Casualty Insurance, 3 credits
- B Ad 122: Life Insurance and Estate Planning, 3 credits
- B Ad 136: Credit Management, 3 credits
- B Ad 138: Investments, 3 credits
- B Ad 143: Marketing Research, 3 credits
- B Ad 145: Sales Management, 3 credits
- B Ad 150: Procurement and Materials Management, 3 credits
- B Ad 171: Principles of Transportation, 3 credits
- B Ad 181: Manufacturing Production, 3 credits
- B Ad 191: Business Reports and Analyses, 3 credits
- Econ 101: Economic Analysis, 3 credits
- Econ 105: Business Cycles, 3 credits
- Econ 165: Government Control of Economic Activity, 3 credits
- Geog 125: Transportation Complexes, 3 credits
- Spee 121: Group Discussion and Conference Leadership, 3 credits

#### **GROUP II: PERSONNEL MANAGEMENT**

The following courses provide the basic academic foundation for such positions as personnel manager, employee relations manager, and employment manager in business and government service.

- B Ad 106: Problems in Personnel Management, 3 credits
- B Ad 107: Labor-Management Contracts, 3 credits

- B Ad 118: Introduction to Data Processing, 3 credits
- B Ad 119: Data Processing Programming, 3 credits
- B Ad 181: Manufacturing Production, 3 credits
- B Ad 191: Business Reports and Analyses, 3 credits
- B Ad 193: Management Communication, 3 credits
- B Ad 195: Controllership, 3 credits
- Jour 143: Industrial Communications, 3 credits
- Jour 145: Principles and Problems of Public Relations, 3 credits
- Psyc 129: Motivational Factors in Personality, 3 credits
- Psyc 131: Psychological Tests, 3 credits
- Psyc 144: Personnel Psychology, 3 credits
- Spee 121: Group Discussion and Conference Leadership, 3 credits

#### GROUP III: FINANCE

The following courses provide the basic academic foundation for such positions as credit analyst, supervisor in a financial institution, bond cashier, trust officer, bank examiner, and similar positions in federal or international financial institutions.

- Acct 111: Financial Statement Analysis, 3 credits
- Acct 121-22: Intermediate Accounting, 6 credits
- B Ad 113: Real Estate, 3 credits
- B Ad 118: Introduction to Data Processing, 3 credits
- B Ad 119: Data Processing Programming, 3 credits
- B Ad 121: Property and Casualty Insurance, 3 credits
- B Ad 136: Credit Management, 3 credits
- B Ad 138: Investments, 3 credits
- B Ad 163: Law in Relation to the Form of Business Units, 3 credits
- B Ad 181: Manufacturing Production, 3 credits
- Econ 101: Economic Analysis, 3 credits
- Econ 105: Business Cycles, 3 credits
- Econ 123: Monetary Theory and Policy, 3 credits

#### GROUP IV: MARKETING

The following courses provide the basic academic foundation for such positions as sales manager, circulation manager, route superintendent, product development manager, buyer, promotion manager, and purchasing agent.

- B Ad 118: Introduction to Data Processing, 3 credits
- B Ad 119: Data Processing Programming, 3 credits
- B Ad 136: Credit Management, 3 credits
- B Ad 142: Marketing Management Problems, 3 credits
- B Ad 143: Marketing Research, 3 credits
- B Ad 145: Sales Management, 3 credits
- B Ad 147: Advertising, 3 credits
- B Ad 150: Procurement and Materials Management, 3 credits
- B Ad 158: Traffic Management, 3 credits
- B Ad 171: Principles of Transportation, 3 credits
- B Ad 175: Introduction to Foreign Trade, 3 credits
- B Ad 176: Exporting and Importing, 3 credits
- B Ad 178: Management of International Business Operations, 3 credits
- B Ad 181: Manufacturing Production, 3 credits
- B Ad 191: Business Reports and Analyses, 3 credits
- B Ad 195: Controllership, 3 credits
- Econ 101: Economic Analysis, 3 credits
- Econ 105: Business Cycles, 3 credits
- Jour 145: Principles and Problems of Public Relations, 3 credits
- Psyc 148: Psychology of Advertising and Consumer Behavior, 3 credits
- Stat 111-12: Business and Economic Statistics I-II, 6 credits

#### GROUP V: CONTROLLERSHIP

The following courses provide the basic academic foundation for the position

#### 118 GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS

of controller in business and government service.

- 
- Acct 101: Cost Accounting, 3 credits
  - Acct 111: Financial Statement Analysis, 3 credits
  - Acct 121-22: Intermediate Accounting, 6 credits
  - Acct 181: Accounting Systems, 3 credits
  - Acct 191: Advanced Accounting, 3 credits
  - B Ad 109: Office Management, 3 credits
  - B Ad 113: Real Estate, 3 credits
  - B Ad 118: Introduction to Data Processing, 3 credits
  - B Ad 119: Data Processing Programming, 3 credits
  - B Ad 121: Property and Casualty Insurance, 3 credits
  - B Ad 163: Law in Relation to the Form of Business Units, 3 credits
  - B Ad 171: Principles of Transportation, 3 credits
  - B Ad 191: Business Reports and Analyses, 3 credits
  - B Ad 195: Controllorship, 3 credits
  - Econ 105: Business Cycles, 3 credits
  - Econ 165: Government Control of Economic Activity, 3 credits
  - Stat 111-12: Business and Economic Statistics I-II, 6 credits

#### GROUP VI: ECONOMICS

The following courses provide the basic academic foundation for such positions as financial economic analyst, industrial economic analyst, and market research analyst in business and government.

- 
- B Ad 118: Introduction to Data Processing, 3 credits
  - B Ad 119: Data Processing Programming, 3 credits
  - B Ad 171: Principles of Transportation, 3 credits
  - B Ad 172: Public Utilities, 3 credits
  - Econ 101-2: Economic Analysis, 6 credits
  - Econ 105: Business Cycles, 3 credits
  - Econ 141: Unionism and Collective Bargaining, 3 credits
  - Econ 161-62: Public Finance and Taxation, 6 credits
  - Econ 165: Government Control of Economic Activity, 3 credits
  - Econ 181-82: International Economics, 6 credits
  - Geog 125: Transportation Complexes, 3 credits
  - Stat 111-12: Business and Economic Statistics I-II, 6 credits

#### GROUP VII: STATISTICS

The following courses provide the basic academic foundation for such positions as financial statistician, planning statistician, industrial statistician, and rate analyst in business and government.

- 
- B Ad 118: Introduction to Data Processing, 3 credits
  - B Ad 119: Data Processing Programming, 3 credits
  - Stat 91: Principles of Statistical Methods, 3 credits
  - Stat 110: Quality Control Techniques, 3 credits
  - Stat 111-12: Business and Economic Statistics I-II, 6 credits
  - Stat 117: Analysis of Variance I, 3 credits
  - Stat 118: Correlation and the Chi-square Test I, 3 credits
  - Stat 155: Introduction to Mathematical Probability, 3 credits
  - Stat 157-58: Mathematical Statistics, 6 credits

#### GROUP VIII: TRANSPORTATION AND TRAFFIC MANAGEMENT

The following courses provide the basic academic foundation for management positions in transportation firms and in the traffic departments of other types of business firms and government agencies. The program should also aid in the preparation for the examinations for membership in the American Society of Traffic and Transportation.

- 
- B Ad 118: Introduction to Data Processing, 3 credits
  - B Ad 119: Data Processing Programming, 3 credits



- B Ad 158: Traffic Management, 3 credits
- B Ad 171: Principles of Transportation, 3 credits
- B Ad 172: Public Utilities, 3 credits
- B Ad 173: Commercial Motor Transportation, 3 credits
- B Ad 174: Commercial Air Transportation, 3 credits
- B Ad 175: Introduction to Foreign Trade, 3 credits
- Econ 101: Economic Analysis, 3 credits
- Geog 125: Transportation Complexes, 3 credits
- Geog 141-42: Urban Settlement, 6 credits
- Hist 174: Economic History of the United States, 3 credits
- Stat 111: Business and Economic Statistics I, 3 credits

#### GROUP IX: AUTOMATIC DATA PROCESSING

The following courses provide the basic academic foundation for positions in data processing in government, business, and industry. They also give the student an understanding of the manager's use of data processing as a vital managerial technique.

- B Ad 118: Introduction to Data Processing, 3 credits
- B Ad 119: Data Processing Programming, 3 credits
- B Ad 120: Data Processing Systems, 3 credits
- Stat 111-12: Business and Economic Statistics I-II, 6 credits

#### Program In Foreign Commerce

This program is designed to provide the basic academic foundation for positions in foreign commerce, both in private industry and in government. It consists of 30 semester hours of *required* course work and 30 hours of electives. Any modification of the program must be made with the consent of the adviser.

##### *Required—Junior and Senior Years*

- B Ad 102: Fundamentals of Management, 3 credits
- B Ad 131: Business Finance, 3 credits
- B Ad 141: Basic Marketing Management, 3 credits
- B Ad 161: Commercial Law: Contracts, Sales, Agency, and Bailments, 3 credits
- B Ad 175: Introduction to Foreign Trade, 3 credits
- B Ad 176: Exporting and Importing, 3 credits
- B Ad 177: Foreign Markets, 3 credits
- B Ad 178: Management of International Business Operations, 3 credits
- Econ 101: Economic Analysis, 3 credits
- Econ 121: Money and Banking, 3 credits
- Elective: To be selected from the following in consultation with the adviser, 30 credits

Total, 60 credits

#### ELECTIVES: FOREIGN COMMERCE PROGRAM

The 30 hours of elective courses are to be selected from the following, in consultation with the adviser.

- Acct 193: Business Budgeting, 3 credits
- B Ad 142: Marketing Management Problems, 3 credits
- B Ad 143: Marketing Research, 3 credits
- B Ad 158: Traffic Management, 3 credits
- B Ad 162: Commercial Law: Negotiable Instruments, Property, Mortgages, 3 credits
- B Ad 171: Principles of Transportation, 3 credits
- B Ad 173: Commercial Motor Transportation, 3 credits
- B Ad 174: Commercial Air Transportation, 3 credits

- B Ad 191: Business Reports and Analyses, 3 credits
- B Ad 193: Management Communication, 3 credits
- B Ad 195: Controllorship, 3 credits
- Econ 181-82: International Economics, 6 credits
- Geog 126: World Economies, 3 credits
- Geog 153-166: Regional survey courses, 3 credits each
- P Sc 167: Foreign Policy of the United States, 3 credits
- P Sc 181-82: International Law, 6 credits
- Stat 111-12: Business and Economic Statistics I-II, 6 credits

For the first two years of the Business and Economic Statistics curriculum, see page 61.

The undergraduate program in Business and Economic Statistics is designed as preparation for business and economic analysis. It consists of 30 semester hours of *required* courses and 30 hours of electives from Accounting, Business Administration, Economics, and Statistics.

*Business and  
Economic  
Statistics*

*Required—Junior and Senior Years*

- B Ad 101: Introduction to Business, 3 credits
- B Ad 102: Fundamentals of Management, 3 credits
- B Ad 131: Business Finance
- or 141: Basic Marketing Management, 3 credits
- B Ad 161: Commercial Law: Contracts, Sales, Agency, and Bailments, 3 credits
- B Ad 162: Commercial Law: Negotiable Instruments, Property, Mortgages, 3 credits
- Econ 101-2: Economic Analysis, 6 credits
- Econ 105: Business Cycles, 3 credits
- Stat 111-12: Business and Economic Statistics I-II, 6 credits
- Elective (A): To be selected from Statistics, 18 credits
- Elective (B): To be selected in consultation with the adviser, 12 credits

Total, 60 credits

## BACHELOR OF ARTS IN GOVERNMENT

Programs leading to the degree of Bachelor of Arts in Government are offered in the fields of International Affairs and Public Affairs.

For the first two years of the International Affairs curriculum, see page 61.

*International  
Affairs*

The International Affairs program covers international political relations, international trade and finance, international communications, and regional studies. Its purpose is to equip students, by providing general background and specialized work, for careers in the field of American foreign relations. The diplomatic service of the United States, the several agencies of government with responsibilities in the international field, the international organizations, and American enterprise abroad offer opportunities in this field.

*Required—Junior and Senior Years*

- Econ 181-82: International Economics, 6 credits
- Hist 181-82: Diplomatic History of the United States, 6 credits
- P Sc 171: International Politics
- or Hist 150: European Diplomatic History since 1878, 3 credits

P Sc 181-82: Survey of Public International Law and Organization  
(Formerly International Law), 6 credits

P Sc 197: Proseminar in International Affairs: Strategies of Contemporary American Foreign Policy, 3 credits

Foreign Language: Composition and Conversation, 6 credits

Geography: To be selected in consultation with adviser, 3 credits

Group Option: To be selected from one of the following groups in consultation with adviser, 15 credits

Elective: 12 credits

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Total, 60 credits

All International Affairs majors must complete the *required* courses listed above, plus the group option. Group option courses must be selected after consultation with the adviser. Normally no more than 6 semester hours may be taken in an option other than the one selected. Consent of the adviser must be obtained for such modification of the option selected.

#### GROUP I: INTERNATIONAL POLITICS

Composed of courses in political science, history, and geography concerned with the study of American diplomatic relations.

#### GROUP II: INTERNATIONAL ECONOMICS

Composed of courses in economics, business administration, geography, and statistics concerned with the study of American economic, financial, and business relationships with foreign countries.

#### GROUP III: INTERNATIONAL COMMUNICATIONS

Composed of courses in anthropology, journalism, political science, psychology, and sociology concerned with the study of international information programs, public opinion, psychological warfare, cultural relations, and public relations. (It is recommended that the student include statistics in his freshman- and sophomore-year program.)

#### GROUP IV: AREA OR REGIONAL STUDIES

Composed of courses in economics, history, political science, and geography. Integrated programs of study are available in the following regions or areas: Europe; Africa and the Middle East; Asia and the Pacific Area; the Soviet Orbit; and Latin America. Modifications and combinations of these areas may be made if approved by the adviser. The foreign language requirement should be met by a language suitable for study of the region or area selected.

**Public Affairs** For the first two years of the Public Affairs curriculum, see page 60.

The Public Affairs program is a composite curriculum dealing with domestic government and policy.

#### *Required—Junior and Senior Years*

Econ 102: Economic Analysis, 3 credits

Econ 121: Money and Banking, 3 credits

Econ 161-62: Public Finance and Taxation, 6 credits

Hist 175-76: Political and Constitutional History of the United States, 6 credits

P Sc 121-22: The Constitution of the United States, 6 credits

P Sc 145: Political Parties and Politics, 3 credits

P Sc 151-52: Public Administration, 6 credits

Group Option: To be selected from one of the following groups in consultation with the adviser, 12 credits

Elective: 15 credits

---

Total, 60 credits



All Public Affairs majors must complete the *required* courses listed above. The group options provide specialization. Modifications and substitutions may be made, when appropriate or necessary, provided the consent of the adviser is obtained.

**GROUP I: ECONOMICS OPTION**

- Econ 101: Economic Analysis, 3 credits
- Econ 104: History of Economic Thought, 3 credits
- Econ 105: Business Cycles, 3 credits
- Econ 165: Government Control of Economic Activity, 3 credits

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Total, 12 credits

**GROUP II: POLITICS OPTION**

- P Sc 104: State and Local Governments, 3 credits
- P Sc 111: Introduction to Comparative Government and Politics, 3 credits
- P Sc 120: Foundations of American Democracy, 3 credits
- P Sc 146: Political Pressures and Public Relations, 3 credits

---

Total, 12 credits

## The Master's Degrees

### Master of Business Administration

Programs leading to the degree of Master of Business Administration are offered in the following fields:

- |                         |                            |
|-------------------------|----------------------------|
| Accounting              | Health Care Administration |
| Business Administration | Personnel Administration   |

### Master of Public Administration

Programs leading to the degree of Master of Public Administration are offered in the following fields:

- |                            |                          |
|----------------------------|--------------------------|
| Health Care Administration | Personnel Administration |
| Public Administration      |                          |

### Master of Arts in Government

Programs leading to the degree of Master of Arts in Government are offered in the following fields:

- |                       |                          |
|-----------------------|--------------------------|
| Public Administration | Economic Policy          |
| Public Affairs        | Business and Economic    |
| International Affairs | Statistics               |
|                       | Personnel Administration |

Programs in the fields of Accounting, Business Administration, Business and Economic Statistics, Economic Policy, Health Care Administration, Personnel Administration, Public Affairs, and Public Administration are administered by the Faculty of Programs in Government and Business; programs in the field of International Affairs are administered by the Faculty of Programs in International Affairs.

## ENTRANCE REQUIREMENTS

A Bachelor's degree from an accredited college or university, with a quality-point index of 3.00 (a *B* average) in the relevant undergraduate fields, is required. A student from an unaccredited institution may be admitted at the discretion of the appropriate Dean's Council, but he may be required to submit scores on the appropriate Graduate Record Examination.

### MASTER OF BUSINESS ADMINISTRATION

It is recommended that applicants for admission to Master's study in Business Administration submit scores on the Advanced Business Test for graduate study in business administered by the Educational Testing Service.

*In the field of Accounting or Business Administration.*—A Bachelor's degree from an accredited college or university.

In the program of automatic data processing appropriate courses in mathematics are required.

*In the field of Health Care Administration.*—A Bachelor's degree from an accredited college or university. In the selection of candidates consideration is given to personal qualifications, aptitude for health care administration, and practical experience.

*In the field of Personnel Administration.*—An undergraduate major in a social science or education, with appropriate courses in psychology.

### MASTER OF PUBLIC ADMINISTRATION

*In the field of Public Administration.*—A Bachelor's degree from an accredited college or university.

*In the field of Personnel Administration.*—An undergraduate major in a social science or education, with appropriate courses in psychology.

*In the field of Health Care Administration.*—A Bachelor's degree from an accredited college or university. In the selection of candidates consideration is given to personal qualifications, aptitude for health care administration, and practical experience.

### MASTER OF ARTS IN GOVERNMENT

*In the field of Public Administration.*—An undergraduate major in a social science or business administration, or equivalent work experience.

*In the field of Public Affairs.*—An undergraduate major in public affairs, economics, history, or political science, depending on the field of specialization.

*In the field of International Affairs.*—The applicant's undergraduate program should include background courses corresponding to an undergraduate major in international affairs at this University.

*In the field of Economic Policy.*—An undergraduate major in economics at this university, or the equivalent.

*In the field of Business and Economic Statistics.*—An undergraduate major in business and economic statistics, or the equivalent.

*In the field of Personnel Administration.*—An undergraduate major in a social science or education, with appropriate courses in psychology.

## GENERAL REQUIREMENTS

A 3.00 average in the undergraduate major is normally required for admission to graduate study. Deficiency in undergraduate preparation may be satisfied by (1) taking specified undergraduate courses and maintaining a 3.00 average in such courses or (2) passing a comprehensive examination in the major field. The comprehensive examination may be taken only with the Dean's approval upon recommendation of the curriculum adviser.

Master's degrees are awarded by vote of the Faculty concerned on completion of the required course work, an acceptable thesis or the equivalent, and the passing of the comprehensive examination. An applicant whose background does not include the necessary courses or equivalent work experience must take a program longer than the minimum hours required.

Second-group courses (numbered 101-200) may be counted toward the Master's degree, only when registration for advanced credit has been approved at the beginning of the course by the curriculum adviser. No work counted toward a Bachelor's degree may also be counted toward a Master's degree.

All work for a Master's degree must be completed in five years, unless an extension of time is granted by the Dean.

A student who expects to continue his studies for the degree of Doctor of Philosophy (Graduate Council), Doctor of Business Administration, or Doctor of Public Administration, after receiving the Master's degree, will be assisted in planning his program so that he may qualify for admission to candidacy for the Doctorate.

No credit is granted for work done *in absentia* or without formal instruction, except for hospital residency and the thesis, which may be completed *in absentia* with the permission of the department, curriculum adviser, or committee concerned.

In addition to any course examinations the candidate must pass a comprehensive written examination. Comprehensive examinations are scheduled two times a year (usually in December and April), and should be taken during the last semester of course registration or shortly after the completion of the prescribed course work. If there is a lapse of time between completion of course work and the comprehensive examination, the student must maintain "continuous registration" during this period. The candidate must consult with his adviser, well in advance, as to the date of his examination and the definition of the subject-matter fields which this examination is to cover. An oral examination on his thesis or major report may also be required.

### Comprehensive Examination

Grades for graduate work are *A*, outstanding; *B*, high quality; *C*, minimum quality; *F*, failure; and *I*, incomplete. *CR* indicates credit. Scholarship

An average of *B* or better is required for the Master's degree. The grade of *C* is not considered as failing but must be counter-balanced by a grade of *A* in a graduate course of equal status.

A Master's candidate who receives a grade of *F* is required to present cause for consideration by the Dean's Council as to why he should be allowed to continue his studies.

Whenever a grade has not been assigned, the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *I* indicates that a satisfactory explanation has been given to the instructor for the student's failure to complete the required work of the



course. An "incomplete" cannot be made up after the lapse of one calendar year except by written permission of the Dean's Council. An incomplete which is not removed within one calendar year is automatically changed to an *F*. An incomplete cannot be removed by reregistering for the course.

**Required Courses** (Certain Fields)  
**in Administration**

The following courses in general administrative theory and practice are *required* of all candidates for the degree of Master of Public Administration and Master of Business Administration, except in the field of Accounting.

B&PA 201: Advanced Administrative Management, 3 credits

B&PA 204: Quantitative Factors in Administration, 3 credits

B&PA 207: Human Factors in Administration, 3 credits

In addition, each student is normally required to take one of the following courses appropriate to his specific area of concentration:

B Ad 297: Case Studies in Business Administration, 3 credits

P Ad 298: Case Studies in Public Administration, 3 credits

HCA 206: Case Studies in Health Care Administration, 3 credits

**The Thesis** The thesis subject should be selected as early as possible so as to permit effective integration with the course work.

The subject must be approved by the professor in charge and recorded in the Office of the Dean by the date announced in the calendar. The thesis in its final form must have the approval of the professor in charge and must be presented to the Dean by the student no later than the date announced in the calendar. Printed copies of detailed regulations regarding the form and reproduction of the thesis are available in the Office of the Dean.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the Faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year is granted without further tuition payment. The student must, however, maintain continuous registration during this period. If the preparation of the thesis extends beyond the two-year period, the student must register for the entire 6 hours of thesis again and pay tuition as for a repeated course.

*The Department  
of State just south  
of the campus*



## MASTER OF BUSINESS ADMINISTRATION

Curricula leading to the professional degree of Master of Business Administration are available in the fields of Accounting, Business Administration, Health Care Administration, and Personnel Administration.

The purpose of the programs leading to the degree of Master of Business Administration is to develop the analytical ability and perspective which will contribute to success as a responsible executive. Because of the increasingly close relationship between government and business, these programs also provide an excellent background for many government careers. In order to provide maximum flexibility, each student program is planned with an adviser.

An applicant must have a Bachelor's degree from an accredited college or university.

The degree is awarded by vote of the Faculty upon satisfactory passing of the comprehensive examination, and the submission of an acceptable thesis. The complete program consists of 60 semester hours, 54 hours of course work and 6 of thesis; and students with no previous background in business administration or accounting are rarely advised to take the comprehensive examination before completing 54 hours of course work. Students who have an undergraduate background in either business administration or accounting, however, are encouraged to take the comprehensive examination as soon as the curriculum adviser believes they are prepared for it. A student who has completed an undergraduate major in accounting or in business administration with a good record may qualify under a minimum acceptable program of 30 hours, including the thesis. No more than 6 hours of graduate course credits can be transferred from other institutions and each transfer of credit must be approved by the Dean.

The Master's programs in accounting are designed (1) for those who wish to pursue careers as professional accountants, (2) for those who wish to pursue careers of executive responsibility with emphasis on finance and accounting in either business or government, and (3) for those who wish to pursue careers as teachers of accounting. Programs are sufficiently flexible to meet individual student objectives; selection of courses is made in consultation with the adviser. The programs are available in three basic areas, professional accounting, governmental accounting, and managerial accounting.

*Accounting*

The Master of Business Administration program is designed for those who wish to pursue responsible careers as administrators in either government or business.

*Business  
Administration*

Individual programs are planned in consultation with the adviser to fit the professional objectives of the student. The course work must include the *required* courses in administration, page 126. Fields of study include administrative theory and practice, business economics, business-government relations, business statistics, controllership, data processing, finance and investments, foreign commerce, human factors in administration, managerial accounting, marketing, operations research, public administration, and transportation.

The programs in Health Care Administration lead to the degrees of Master of Business Administration or Master of Public Administration with areas of concentration in the administration of short-term hospitals, long-term care facilities, and health records. The basic curricu-

*Health Care  
Administration*



lum outlined under the field of hospital administration, below, serves the first two areas of concentration. Electives appropriate to the field of concentration are selected from the special courses in long-term care administration and those in health records administration.

The Health Care Administration programs are designed to give students the opportunity of acquiring the knowledge, attitudes, and skills essential as foundations for growth into capable health care administrators.

Prerequisite: a Bachelor's degree from an accredited college or university is prerequisite to admission to all Health Care Administration programs. While a 3.00 (B) average in the undergraduate work is expected, in the selection of candidates considerable weight is given to personal qualifications, aptitude for the area of concentration selected, and practical experience. Hospital work experience is desirable but not required. Preadmission experience in a hospital is arranged on request or if otherwise indicated.

While no undergraduate major is specified, a desirable background for short-term hospitals and long-term facilities (prerequisite requirements in the field of health records administration are stated on pages 129-30) would include courses in accounting, biology, business administration, economics, psychology, sociology, and statistics. A minimum of 6 semester hours of undergraduate accounting and 3 hours of statistics courses must be taken prior to admission to degree candidacy. Applicants with academic deficiencies may be permitted to enroll as special students subject to the satisfactory completion of prescribed courses beyond the minimum requirements for admission.

Master's candidates who may wish to continue for a doctorate should plan the Master's program accordingly, in consultation with their advisers.

In addition to the degree programs in Health Care Administration, special courses are offered which are concerned with health care associations, planning agencies, consulting firms, and insurance plans.

For special programs in Continuing Education in Health Care Administration and the International Institute for Health Care Administration, see pages 138-39.

#### HOSPITAL ADMINISTRATION

The program in hospital administration is divided into two phases. During the first phase the student must satisfactorily complete 36 hours of course work, selected in accordance with his background needs. These courses cover the general and technical background of hospital administration, general administrative theory and practice, and problem solving in the area of management as it relates to short-term hospitals. The second phase is a calendar-year residency of on-the-job institutional training under qualified supervision, which carries 9 semester hours of credit. A written major report is required as a part of phase two. Selected students take an additional full year of residency, for which they receive 9 hours of credit.

Full-time students should complete the degree program in twenty-one months; part-time students in thirty-six months. Under special circumstances, additional time may be granted. No student is admitted who does not intend to complete the program.

With special permission, additional research and course work may be substituted for a part of the clinical training. Because each program is designed for the individual student, it is possible that a student may be required to complete two years of academic work and only three months of residency.



## CURRICULUM

The following curriculum is required of Master's candidates in all fields of Health Care Administration (except Health Records Administration):

- 
- B&PA 201: Advanced Administrative Management, 3 credits
  - B&PA 204: Quantitative Factors in Administration, 3 credits
  - \*B&PA 207: Human Factors in Administration, 3 credits
  - HCA 202: Introduction to Health Care Administration, 3 credits
  - HCA 203: Organization and Management, 3 credits
  - HCA 206: Case Studies in Health Care Administration, 3 credits
  - HCA 209: Health Care Economics, 3 credits
  - HCA 212: Planning and Constructing Health Care Facilities, 3 credits

† HCA 293-94-95: Residency I, 9 credits

Elective: To be selected with the approval of the adviser, from Business or Public Administration, depending on the degree sought, 12 credits

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Total, 45 credits

## ADMINISTRATION OF LONG-TERM CARE FACILITIES

Master's candidates electing a concentration in the administration of long-term care facilities, such as chronic disease hospitals, nursing homes, facilities for the aged, and mental hospitals, have the same admission requirements as students in the hospital administration field and follow the curriculum outlined above to satisfy the 36 semester hour requirement of the first phase of the degree program. With the approval of an adviser, electives are selected from the following courses, in accordance with the special interest of the candidate:

- 
- HCA 250: Administration for Mental Care, 3 credits
  - HCA 260: Administration for Long-term Care Facilities, 3 credits
  - HCA 261: Business Procedures in Long-term Care Facilities, 3 credits
  - HCA 265-66: Readings in Long-term Care Administration, 6 credits
  - HCA 267: Social Gerontology for the Administrator, 3 credits

The second phase of the program consists of a calendar year of residency in one or more facilities for long-term care, for which the student receives 9 semester hours of credit. During the residency year the candidate must write a major report.

## HEALTH RECORDS ADMINISTRATION

Students electing this concentration may terminate their study with the completion of the first phase, at which time a certificate is awarded and qualification attained for national certification as a medical records librarian, or they may complete the requirements for the Master's degree.

Prerequisite: a Bachelor's degree from an accredited college or university is required, including 6 semester hours in human anatomy and physiology, 3 hours in statistics, and 6 hours in accounting. A broad liberal arts background is preferred, including courses in such fields as anatomy, biology, business administration, history, logic, physiology, and sociology.

\* When appropriate, hospital administration students may take Psychology 245. Seminar: *Employee Motivation and Morale*, and/or omit B&PA 207 if content is included in other course requirements.

† The student must register for 3 semester hours of residency at the end of the first phase and before leaving the University for the residency hospital. Registration for 1966 will be held May 27, 1966.

The first phase consists of the following curriculum of 36 semester hours of course work and a 3-hour internship of approximately four months.

- B Ad 211: Personnel Management and Industrial Relations, 3 credits
- B Ad 219: Digital Computer Programming Concepts, 3 credits
- B Ad 220: Comparative Digital Computer Systems and Their Management, 3 credits
- B Ad 221: Management Information Systems Development and Application, 3 credits
- HCA 203: Organization and Management, 3 credits
- HCA 205: Hospital Management Procedures, 3 credits
- HCA 221-22: Fundamentals of Medical Science and Medical Terminology, 6 credits
- HCA 223-24: Introduction to Health Records Administration, 6 credits
- HCA 225-26: Principles and Problems of Health Records Administration, 6 credits
- HCA 229: Health Records Administration Internship, 3 credits

The second phase consists of additional prescribed course work (approximately 33 semester hours of full-time study) and a period of residency suitable to meet the requirements for the Master's degree and a written report on a major work project.

*Two-year Academic Program.*—Students who wish to cover subject matter in greater depth may take two years of academic study before undertaking the one-year residency.

Students in the two-year academic program are able to take additional courses in other areas thus gaining a more comprehensive knowledge in long-term care, automatic data processing, public administration, and regional planning. Those planning to undertake doctoral study may find the two-year academic program particularly helpful. This two-year academic program is above and beyond all prerequisites now required for graduate study such as accounting, statistics, and others. Under exceptional circumstances the student may do two years of academic work with only three months of University sponsored residency prior to eligibility for the Master's degree. Each program is tailored to the individual student's experience, needs, and aims.

#### *Personnel Administration*

The program of Personnel Administration is described on page 134 and may lead to the degree of Master of Arts in Government, Master of Business Administration, or Master of Public Administration.

### **MASTER OF PUBLIC ADMINISTRATION**

Curricula leading to the professional degree of Master of Public Administration are available in the fields of Public Administration, Health Care Administration, and Personnel Administration.

#### *Public Administration*

This program provides a course of study appropriate for those students currently in government or with appreciable past experience in government. This is a professional degree, preparing graduates for positions of higher responsibility in the public service and generally improving their competence in public employment. Work done for this degree may lead directly toward the degree of Doctor of Public Administration. Applicants must have a Bachelor's degree from an accredited college or university.



The degree is awarded by vote of the Faculty upon satisfactory passing of the comprehensive examination, and the submission of an acceptable thesis. The program consists of 60 semester hours, 54 hours of course work and 6 of thesis. Students with a limited background in public administration, political science, or a closely related social science are rarely advised to take the comprehensive examination before completing 54 hours of course work. However, students who have undergraduate backgrounds in political science, history, economics, sociology, or psychology, or appropriate career experience are encouraged to take the comprehensive examination as soon as the curriculum adviser believes they are prepared for it. The minimum acceptable program is 30 hours. Students who have completed the Public Affairs undergraduate major at The George Washington University, or its equivalent, with good records, may complete the requirements for the degree of Master of Public Administration within a 30-hour minimum, including the thesis. No more than 6 hours of graduate credit can be transferred from other institutions; and each transfer of credit must be approved by the Dean.

The course work for the Master of Public Administration degree must include the *required* courses in administration, page 126. Other courses, selected with the approval of the adviser, should be concerned with selected fields of administration in government and related social and economic studies. The thesis, which may be a major case study, is prepared under the guidance of an appointed adviser.

Candidates are required to offer the field of administrative theory and practice. In addition, students select, in consultation with an adviser, two fields from the following: administration in the Federal Government, international public administration, public personnel management, public financial management and budgeting, human factors in administration, business-government relations, metropolitan administration and urban affairs, data processing and systems management. Fields of study may also be selected from closely related social sciences.

The programs of Health Care Administration are described on pages 127-30, and lead to the degrees of Master of Business Administration or Master of Public Administration.

*Health Care  
Administration*

The program of Personnel Administration is described on page 134, and leads to the degree of Master of Business Administration, Master of Public Administration, or Master of Arts in Government.

*Personnel  
Administration*

## **MASTER OF ARTS IN GOVERNMENT**

Curricula leading to the degree of Master of Arts in Government are available in the fields of Public Administration, Public Affairs, International Affairs, Economic Policy, Business and Economic Statistics, and Personnel Administration.

The programs leading to this degree require a minimum of 30 semester hours of work, including 24 hours of course work and a thesis equivalent to 6 semester hours. During recent years, most individual student programs have exceeded 30 hours, dependent upon the undergraduate major and other prerequisites.



Second-group courses (numbered 101-200) may be counted toward the Master's degree up to a maximum of 12 hours, but only when registration for advanced credit has been approved at the beginning of the course by the curriculum adviser. No work counted toward a Bachelor's degree may also be counted toward a Master's degree.

#### LANGUAGE REQUIREMENTS (CERTAIN FIELDS)

A candidate for the degree of Master of Arts in Government with a major in Economic Policy, International Affairs, or Public Affairs must show that he has a reading knowledge (certified by the appropriate language department) of at least one modern foreign language, to be approved by the Dean. The language examination should be taken before the student begins the second 15 hours of his work. No student may take the examination more than three times.

#### *Public Administration*

Prerequisite: an undergraduate background in social science or business administration, or equivalent work experience.

The program, in contrast to the professional program leading to the degree of Master of Public Administration (see pages 130-31), is designed for students who wish to emphasize the academic elements of Public Administration. It is primarily for those who have not yet had work experience in managerial positions in government, but who wish to pursue a government career. It may also serve as a basis for later study toward the degree of Doctor of Philosophy (Graduate Council) in related fields. It is a suitable degree objective for students who have just completed the Bachelor's degree.

Three fields must be offered for examination: (1) administration and policy formulation in government; (2) a choice from the fields of public personnel management, financial management and budgeting in government, data processing and systems management, human factors in administration, accounting and statistics; (3) a choice from a major area of study in such academic fields as economics, geography, history, political science, psychology, and sociology.

Six semester hours in the program, Public Administration 299-300, represent the major research project and preparation of the thesis.

The course work is planned with an adviser.

#### *Public Affairs*

Prerequisite: an undergraduate major in public affairs, economics, history, or political science, depending upon the field of specialization. Any course deficiency in the undergraduate Public Affairs Curriculum, as stated on pages 122-23, must be made up.

The language requirement, see above, must be satisfied.

The program in Public Affairs is offered in two fields of specialization: domestic economics and domestic politics.

Recommended for domestic economics: courses in economic development, economic policy, public finance, and national income.

Recommended for domestic politics: courses in United States social, constitutional, and political history; comparative government; political theory; legislative organization; jurisprudence; political parties; and public opinion.

#### *International Affairs*

Prerequisite: the applicant's undergraduate program should include background courses corresponding to an undergraduate major in International Affairs at this University. (See pages 121-22.)

Any omissions in the applicant's former program must be made up

by appropriate courses in addition to the requirements for the Master's degree.

The language requirement, page 132, must be satisfied.

The program in International Affairs is offered in five fields of specialization: international economics, international politics, international communications, regional studies, and Sino-Soviet affairs. It is comprised of from 30 to 60 hours of academic work (depending on the background of the student); a thesis, which is counted as equivalent to 6 hours of course work; and a written comprehensive examination. Courses needed as background preparation for graduate study are indicated in the student's letter of admission. Each program is worked out individually in conference with the student's adviser.

A minimum of 24 hours must be in third-group courses, numbered above 200. Relevant second-group courses may be credited toward the Master's degree only when registration for graduate credit has been approved at the beginning of the course by the Dean and by the instructor and when the completion of additional work has been certified by the instructor.

The listing of graduate courses for these fields of specialization is given in the departmental offerings for Anthropology, Economics, Geography and Regional Science, History, Political Science, Psychology, and Sociology.

#### GROUP I: INTERNATIONAL ECONOMICS

Graduate courses in economics (numbered over 200) in the field of international trade, the balance of payments, international financial policies, and international economic policies form the principal part of this specialization. Graduate courses in economic theory are recommended. Other courses may be included with the consent of the adviser.

#### GROUP II: INTERNATIONAL POLITICS

Graduate courses in political science and history (numbered over 200) in international law, international politics, international organization, diplomatic history, and American foreign policy, comprise the principal requirements for this specialization. Related courses may be added with the consent of the adviser.

#### GROUP III: INTERNATIONAL COMMUNICATIONS

Graduate courses (numbered over 200) in political science, psychology, sociology, anthropology, and geography with 12 hours (one-half of the course work) in the fields of public opinion, international information, psychological warfare, and communications, and 12 hours (one-half of the course work) in the fields of international politics and area studies. The adviser in all cases must approve the course selections.

#### GROUP IV: REGIONAL STUDIES

Graduate courses in economics, political science, history, and geography (numbered over 200) dealing with a geographic region, such as Latin America; Europe; Africa and the Middle East; Asia; the Soviet Orbit (see Institute for Sino-Soviet Studies, pages 247-52); or the Pacific Area, comprise the principal requirements. Other courses of broader scope in economics, history, and political science are recommended as part of the program. The adviser in all cases must approve such selections.

#### GROUP V: SINO-SOVIET AFFAIRS

The Institute for Sino-Soviet Studies provides a program of interdisciplinary study centered on the problems of the Sino-Soviet areas and the International Communist Movement. Graduate studies under the auspices of the Institute are available to qualified students. Courses and seminars are de-



signed to analyze the principles and problems of International Communism and to study the policies, strategies, and tactics of the major Communist powers. (See pages 247-52.)

**Economic Policy** Prerequisite: an undergraduate major in economics or the equivalent.

The 30 hours of course work must include Economics 210, 265-66, and the thesis, Economics 299-300.

The language requirement, page 132, must be satisfied.

Recommended: courses in income and employment, national income, business cycles, monetary and fiscal policy, economic theory, and statistics. These courses and others that may be appropriate are to be selected with the consent of the adviser.

**Business and Economic Statistics** Prerequisite: an undergraduate major in Business and Economic Statistics, or the equivalent: such work must include a minimum of 24 semester hours of second-group courses in statistics and a minimum of 10 semester hours in second-group courses in accounting, business administration, and economics.

This program requires at least 12 semester hours of graduate courses in statistics. The remaining courses are to be selected from graduate offerings in accounting, business administration, economics, public administration, and statistics with the approval of the adviser. A thesis equivalent to 6 semester hours is required.

**Personnel Administration** The program in personnel administration leads to the degree of Master of Arts in Government, to the degree of Master of Public Administration (if elective courses are directed toward Public Administration), or to the degree of Master of Business Administration (if elective emphasis is directed toward Business Administration).

The course work must include the *required* courses in administration, page 126, and the thesis (Business Administration 299-300 or Public Administration 299-300.) Each individual student program is arranged in consultation with a curriculum adviser.

## Certificates

### GRADUATE CERTIFICATE IN HEALTH CARE ADMINISTRATION

Students with approved Master's degrees from accredited institutions may take a special post-Master's program leading to a Graduate Certificate in Health Care Administration. Each program will be planned to meet the professional needs of the individual student whether he wishes to undertake a new field of study or amplify his knowledge of work done at the Master's level.

This program permits study in depth in such areas as health care administration consulting, regional planning, governmental administration, and long-term health care administration, including mental hospitals, nursing homes and care of the aged.

Prerequisite: a Master's degree from an accredited college or uni-



versity and an academic average which indicates the ability to undertake advanced study. The applicant is also judged on his experience, character, and personality. Students lacking formal study in health care administration will be required to take qualifying courses.

#### REQUIREMENTS FOR THE CERTIFICATE

Students with adequate preparation in the health care field can complete the requirements with a minimum of 18 semester hours of approved graduate study. Those lacking such specialized study or equivalent experience will usually need to complete approximately 30 hours. At the discretion of the student's advisory committee a maximum of 6 semester hours may be transferred from another accredited institution if the work was taken for credit toward a graduate degree.

#### PROGRAM OF STUDIES

Health Care Administration 270 *Research in Health Care Administration* is required of all candidates for the Certificate. The remaining courses consist of a program of study worked out in consultation with a faculty adviser and planned with consideration of the student's educational and experience background and his specific professional objectives.

### CERTIFICATE OF THE INSTITUTE FOR SINO-SOVIET STUDIES

The Institute for Sino-Soviet Studies offers a certificate program of graduate study for students who do not intend to work toward graduate degrees but wish evidence of specialized study on the Soviet Union, China, or both.

#### ENTRANCE REQUIREMENTS

A Bachelor's degree from an accredited college or university, with a quality-point index of 3.00 (a *B* average) is required.

The applicant's undergraduate program should include background courses corresponding to an undergraduate major in International Affairs at this University, with emphasis on the Soviet Orbit (see pages 121-22). Any deficiencies in the applicant's study of the Soviet Union and China must be satisfied by appropriate undergraduate courses, as specified by his adviser in addition to the requirements for the Certificate.

#### REQUIREMENTS FOR THE CERTIFICATE

The program consists of 30 semester hours of graduate study and the passing of a reading examination in Russian or Chinese, or both. Each program is planned in consultation with the Director of the Institute or one of his associates. Since the Institute places emphasis upon the interdisciplinary approach to study and research, the student can expect his program to include work in economics, geography, history, law, literature and culture, political systems, political theory, and psychology.

Although the student's background and prior study determine to a considerable extent his program in the Institute, intensive research in either country should run concurrently with seminars listed in the annual program of the Institute.

#### RESIDENCE

All of the work for the Certificate must be taken in residence in the School of Government, Business, and International Affairs, as a candidate for the Certificate; and all of the work must be completed in a maximum of three years, unless an extension of time is granted by the Dean.

## Doctoral Study

Work for the degrees of Doctor of Business Administration and Doctor of Public Administration is under the supervision of the Committee on Doctoral Studies.

Completed application forms must be sent to the Director of Admissions. The applicant should ask three individuals, who are acquainted with his ability to do high-level academic work, to write directly to the Chairman of the Committee on Doctoral Studies. Applicants for the degree of Doctor of Business Administration must file results of the Advanced Business Test for graduate study in business with the Director of Admissions before final approval of their applications can be given. Arrangements to take the Test must be made with the Educational Testing Service, 20 Nassau Street, Princeton, N. J. 08540; or 1947 Center Street, Berkeley, Calif. 94704.

An applicant must have the degree of Master of Business Administration or Master of Public Administration, as appropriate; Master of Arts in an approved field; or the equivalent, together with acceptable personal qualities and a capacity for creative scholarship. Each applicant must demonstrate his competence by qualifying examinations.

The Committee on Doctoral Studies, in consultation with the applicant, will (1) designate fields of study selected from such areas as Business Administration, Economics, Health Care Administration, International Affairs, Public Administration, Public Affairs, and Political Science, and (2) appoint an adviser to guide the student in his work in these fields. Most students will complete 30 semester hours in graduate courses and such additional course work as may be prescribed by the adviser; but each program is individually arranged in light of the student's background.

When the applicant has satisfied his adviser and the Committee of his readiness to take the General Examination in the fields of study previously designated, the examination will be scheduled during the following January or May.

Upon successful completion of the General Examination and approval of the subject of the doctoral dissertation, the student may be admitted to candidacy by the Committee on Doctoral Studies. The candidate's research and the preparation of his dissertation are supervised by a Research Adviser designated by the Committee.

#### *The Dissertation*

No later than the date specified in the University calendar the candidate must submit to the Dean three complete copies of the dissertation (including a summary which is to be inserted as an appendix) together



with a fourth copy of the summary and a copy of the abstract for inclusion in the announcement of the examination. It is the responsibility of the candidate for a Doctoral degree to obtain from the Dean a printed copy of the regulations governing the styling and reproduction of the dissertation, which are rigidly enforced. The summaries of accepted dissertations will be printed in a numbered issue of the UNIVERSITY BULLETIN. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation. Accepted dissertations, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the Dean.

The Final Examination of the candidate consists of his oral defense of the dissertation. The examination will be given by a committee appointed by the Committee on Doctoral Studies. Upon successful completion of this oral examination the candidate will be approved for the degree of Doctor of Business Administration or Doctor of Public Administration by the Committee on Doctoral Studies.

#### *The Final Examination*

The Committee on Doctoral Studies expects all students to maintain continuous registration until *all* degree requirements are satisfied, although there is no formal regulation concerning the minimum amount of time of study either in preparation for the General Examination or as a doctoral candidate engaged in research. The student who undertakes either part of the doctoral program on full or limited schedule must maintain "continuous registration" under the School of Government, Business, and International Affairs even when he is granted a leave of absence for study or residence elsewhere. By failing to register for one semester or more, the student breaks his registration and must apply for readmission to the School under whatever new conditions and regulations are set up by the Committee or the member of the Faculty who directs his research. The student who has completed his tuition requirements, but whose graduation is deferred for any reason, must maintain continuous registration by paying the continuous registration fee for the semester immediately preceding the graduation at which he expects to receive his degree.

#### *Residence and Continuous Registration*

The degree of Doctor of Philosophy in the field of International Relations is offered in the Graduate Council of the University. The Doctoral program in this field includes work in economics, history, and political science. Students working towards the degree of Doctor of Philosophy in the fields of Political Science, History, and Economics can arrange concentrations in various aspects of international affairs. Requirements for the degree of Doctor of Philosophy are stated on pages 76-78, 79.

## **Special Programs**

### **GOVERNMENT MANAGEMENT INTERN SCHOLARSHIP PROGRAM**

The Government Management Intern Scholarship Program offers annually fifty scholarships to assist federal agencies in training carefully



selected young men and women for administrative leadership in government career service. Each scholarship provides a tuition-free course of 3 hours a semester and appropriate academic credit (up to 6 semester hours) for the successful completion of training assignments required in any agency whose training program has been approved for this purpose by the University.

#### NAVY GRADUATE FINANCIAL MANAGEMENT PROGRAM

The Navy Graduate Financial Management Program, sponsored by the Naval Postgraduate School, provides 50 semester hours of work in financial management and related fields for a selected group of Naval and Marine officers. The Master of Business Administration degree is awarded upon successful completion of this full-year program.

#### AIR FORCE ADVANCED MANAGEMENT PROGRAM

The Air Force Advanced Management Program, sponsored by the United States Air Force Institute of Technology, provides 50 semester hours of work in advanced management and supporting fields for a selected group of Air Force officers. Most of the officers receive the Master of Business Administration degree upon successful completion of this full-year program.

#### GRADUATE PROGRAMS AT SENIOR SERVICE COLLEGES

The School of Government, Business, and International Affairs cooperates with the College of General Studies in the Off-Campus programs of that College, particularly in the fields of accounting, business administration, financial management, governmental administration, international affairs, and personnel administration. Special Master's degree programs have been established by the College of General Studies in cooperation with the School of Government, Business, and International Affairs for the students and faculty of the Army War College, Carlisle Barracks, Pennsylvania; the Air War College and the Command and Staff College, Air University, Maxwell Air Force Base, Alabama; the Industrial College of the Armed Forces and the National War College, Fort McNair, Washington, D. C.; and the Naval War College, Newport, Rhode Island. These programs lead to the degrees of Master of Science in Business Administration, Master of Science in International Affairs, and Master of Science in Public Administration.

#### COOPERATIVE PROGRAM IN URBAN AFFAIRS WITH VIRGINIA POLYTECHNIC INSTITUTE

A Washington Program in Urban Studies was instituted in the fall semester of 1964 in cooperation with the faculty of Urban and Regional Planning of the College of Architecture of Virginia Polytechnic Institute. Under this program a faculty member and a group of students from VPI live and study at The George Washington University during the fall semester each year. The program consists of lectures and seminars in addition to studio problems, studies in housing, urban design, intergovernmental relations, and urban renewal. Courses offered under this program are available to students majoring in Urban Affairs. Students desiring to participate in this program should consult with their advisers or the Coordinator of Programs in Public Administration.

#### CONTINUING EDUCATION IN HEALTH CARE ADMINISTRATION

A nondegree program is conducted in the various areas of health care administration both on-campus and off-campus whenever a sufficiently

large class is organized. Institutes, workshops, and lecture series are conducted under the auspices of program faculty and selected leaders from local, state, and regional areas on topics of current interest to the requesting organization. No specific prerequisite is required. Fees are to be announced.

#### THE INTERNATIONAL INSTITUTE FOR HEALTH CARE ADMINISTRATION

In recognition of special educational needs of students from other countries. The International Institute for Health Care Administration offers programs of instruction designed to meet these requirements either at degree or certificate levels.

It is also equipped to enter into arrangements with principals of hospital systems in world-wide areas to assist in the preparation of teaching programs, or the actual instruction of administrative personnel either abroad or at the University.

#### CENTER FOR BEHAVIORAL SCIENCES

The Center, administratively related to the School of Government, Business, and International Affairs, was established as an interdepartmental and interdisciplinary organization for encouraging behavioral science research, projects, and programs. Projects are sponsored and financed by foundations, governmental agencies, private organizations, and individuals.

A Faculty Executive Committee gives University supervision, and a nation-wide Advisory Board provides policy recommendations for long-range planning. Faculty members and students participate in the research activities of the Center for the Behavioral Sciences.

Results of research studies and related projects are reported through a publication program of the Center. A two-week Laboratory utilizing sensitivity training is sponsored annually by the Center and the College of General Studies in cooperation with the National Training Laboratories of the National Education Association.

#### THE MANAGEMENT RESEARCH GROUP

The Management Research Group seeks to serve government and industry and commerce by contributing to the development and understanding of basic theory in the field of management. The Group also provides assistance in translating theory into practice.

Relationships and techniques important to modern information flow and managerial decision making are stressed. The research conducted extends to system design, analysis of system performance, and the evaluation of practice in relation to managerial criteria.

#### INSTITUTE FOR SINO-SOVIET STUDIES

The Institute for Sino-Soviet Studies provides a program of specialized graduate study and research within the School of Government, Business, and International Affairs. Courses of the Institute are drawn from a variety of academic areas and thus provide an interdisciplinary approach to the study of the Soviet Union, Eastern Europe, the Far Eastern Communist states, and the world Communist movement. Faculty members conduct seminars and reading courses in the disciplines of economics, geography, history, law, political science, and psychology.

*Graduate Study and  
Research in  
Communist Affairs*



The Institute provides Master's and Doctoral candidates with the opportunity to combine a course program of Sino-Soviet Studies with the work in their own disciplines. It also offers a 30-semester hour program of graduate study leading to a Certificate for specialized study on the Soviet Union, China, or both, see pages 135-36.

Students who are preparing for the degree of Master of Arts in Government in the field of International Affairs in the School of Government, Business, and International Affairs, or for the degree of Master of Arts in the field of economics, geography, history, or political science in Columbian College of Arts and Sciences, with a specialization in Sino-Soviet Studies, may take one-half of their course work from the Institute's program.

Students working toward the degree of Doctor of Philosophy in International Relations with special emphasis on the Sino-Soviet Area are expected to combine work in the Institute with work in the fields of economics, history, and political science. Doctoral candidates in the field of political science may combine work in the Institute with work in an appropriate number of fields within political science. All work leading to the degree of Doctor of Philosophy is under the general supervision of the Graduate Council and Consultative Committees designated by it which direct the work of each graduate student upon admission to degree candidacy. Doctoral candidates in political science and other disciplines may assume that their committees in consultation with them will arrange for an appropriate combination of fields concerned with Sino-Soviet Studies with work in other phases of their disciplines. A candidate for such a degree should assume that his committee will require the substitution of a reading examination in Chinese or Russian for one of the two Western languages normally required for the degree.

#### RESEARCH

Research work is integrated with the teaching program. Members of the research program belong to different disciplines and include not only faculty but also selected graduate students. Research monographs are being published by the Institute.

A special brochure describing in more detail the work of the Institute is available upon request.

#### *Interuniversity Research Colloquium on Modern China*

An Interuniversity Research Colloquium on Modern China was established in 1964 by a group of scholars from The George Washington University, American University, Howard University, and the University of Maryland, interested in studies on China in the 20th Century. The research colloquium is under the chairmanship of Professor Franz Michael, Associate Director of the Institute for Sino-Soviet Studies. Research in progress undertaken by its members and plans for future research are discussed. Advanced graduate students can be admitted on approval of the Chairman. They will receive regular academic credit (3) hours).



## PROGRAMS IN GOVERNMENT AND BUSINESS

Assistant Dean J. C. Dockeray

### Faculty and Staff of Instruction \*

*Professors* C. E. Bradley (*Research*), H. F. Bright, D. S. Brown, J. C. Dockeray, R. B. Eastin, R. F. Ericson, F. H. Gibbs, Leon Gintzig, T. W. Holland, G. C. Jacobus, J. L. Jessup, E. H. Johnson, Solomon Kullback, H. L. LeBlanc, Edwin Lewis, G. L. Lippitt, J. W. Skinner, Waldo Sommers, K. E. Stromsem, D. S. Watson, A. M. Woodruff (until February 1, 1965)

*Professorial Lecturers* S. N. Alexander, Charles Berns, J. L. Buckler, C. W. Clewlow, L. C. Collins, Seymour Geisser, C. E. Goode, Samuel Greenhouse, Frank Higginbotham, C. E. Houston, Robert Kaye, Tom Kouzes, J. L. Krieger, C. U. Letourneau, K. F. McClure, Edward McCrensky, J. P. Murphy, Ben Posner, M. H. Schwartz, F. I. Shaffner, Clark Simpson, I. E. Steele, J. N. Stonesifer, Clark Tibbitts, W. G. Torpey

*Associate Professors* J. G. Brown, E. W. Camp, D. R. Cloutier, J. W. Coughlan, P. R. Huntley, F. C. Kurtz, J. F. McCarthy, Jr., C. M. Mickey, Joseph Monane, J. H. Walters, Jr.

*Associate Professorial Lecturers* Norman Beckman, Jerome Bracken, W. W. Brownholtz, C. M. Campbell, O. C. Disler, J. F. Doubleday, Samuel Humes, George Idelson, V. B. Lewis, J. A. Morrow, Ross Pollock, E. E. Pontius, Jr., John Provan, P. C. Tosini

*Assistant Professors* R. A. Barrett, Rosemary Capusan, G. F. Conner, D. M. Cook, M. G. Gallagher, P. D. Grub, P. B. Jones, H. R. Page, Chei-Min Paik, L. C. Smith, R. E. Thomas

*Assistant Professorial Lecturers* R. J. Bond, C. J. Brinkman, J. E. Daly, Jr., Richard Foster, Aladino Gavazzi, O. B. Martinson, Jr., W. E. McConville, F. X. McKenna, R. W. Perkins, Marjorie Quandt, J. F. Regan, D. E. Russell, J. A. Schaffer, Leslie This

*Instructor* J. R. Roman, Jr.

*Instructors (part-time)* Charles Eskew, M. M. Dietch, Jr.

### COMMITTEES †

#### DEAN'S COUNCIL

K. E. Stromsem (*Chairman*), R. B. Eastin, F. H. Gibbs, F. C. Kurtz, Waldo Sommers

#### COMMITTEE ON CURRICULUM AND PROGRAMS IN GOVERNMENT AND BUSINESS

J. C. Dockeray (*Chairman*), J. W. Coughlan, R. B. Eastin, F. H. Gibbs, H. R. Page

#### COMMITTEE ON DOCTORAL STUDIES IN BUSINESS ADMINISTRATION AND PUBLIC ADMINISTRATION

J. C. Dockeray (*Chairman*), D. R. Cloutier, J. W. Coughlan, R. B. Eastin, E. H. Johnson, D. S. Watson

\* Professors, Associate Professors, Assistant Professors, and Instructors (full-time) constitute the Faculty. Faculty and Staff of Instruction for the academic year 1964-65.

† The Dean and Assistant Dean of the School and the Assistant Dean (Programs in Government and Business) are ex officio members of all committees.

**Center for Behavioral Sciences Advisory Board**

E. H. Bellows, (*Chairman*), *Vice President, Olin Mathieson Chemical Corporation*; R. C. Bedell, *Director, Counseling and Guidance, Institutes Branch, Division of College and University Assistance, U. S. Office of Education*; L. P. Bradford, *Director, National Training Laboratories, National Education Association*; J. F. Bunting, *General Secretary, National Council of Young Men's Christian Associations*; M. P. Crawford, *Director, Human Resources Research Office*; Ernest Whitman Gross, *Director of Sales and Distribution Division, Committee on Economic Development*; Jane Fiquet Hanna, *Deputy Director of Civil Defense, Office of the Secretary of the Army*; Ronald Lippitt, *Program Director, Institute for Social Research, University of Michigan*; Alfred Marrow, *President, Harwood Manufacturing Company*; J. M. Mitchell, *Director, Advanced Study Program, The Brookings Institution*; Ross Pollock, *Assistant Director, Career Development Office, U. S. Civil Service Commission*; T. C. Sorenson, *Deputy Director for Policy and Plans, U. S. Information Agency*

#### EXECUTIVE COMMITTEE FOR THE CENTER FOR BEHAVIORAL SCIENCES

B. D. Van Evera (*Chairman*), Richard Allen, J. C. Dockeray, J. L. Finan, F. N. Hamblin, Thelma Hunt, G. L. Lippitt, J. R. Sizoo, R. W. Stephens

#### PROGRAMS IN INTERNATIONAL AFFAIRS \*

*Assistant Dean H. M. Stout*

#### Faculty and Staff of Instruction

*Professors* Joseph Aschheim, J. L. B. Atkinson, J. W. Brewer, J. A. Brown, Jr., R. D. Campbell, W. C. Davis, R. H. Davison, C. E. Galbreath, W. C. Hopkins, W. H. Kraus, K. L. London, H. M. Merriman, Franz Michael, J. N. Mosél, R. E. Purcell (*Visiting*), Wilson Schmidt, H. M. Stout, W. L. Tayler, R. B. Thompson, Herman Walker, Jr., R. K. White

*Professorial Lecturers* Herbert Block, R. L. Garthoff, P. W. Han, J. J. Karch, Thomas Larson, Bela Maday, Lothar Metzl, V. P. Petrov, T. W. Wolfe

*Associate Professors* Robert Boyd (*Visiting*), J. T. Davis, H. C. Hinton, R. S. Jordan, H. R. Ludden, Benjamin Nimer, G. D. Overstreet, George Stambuk

*Associate Professorial Lecturer* T. P. Thornton

*Assistant Professors* P. F. Gallagher, Michael Gasster, P. P. Hill, J. K. McDonald, Willard Overgaard, Bernard Reich

*Assistant Professorial Lecturers* Paul Gekker, L. T. Lee, Bernard Ramundo

#### Committees † DEAN'S COUNCIL

W. H. Kraus (*Chairman*), C. E. Galbreath, H. M. Merriman

#### COMMITTEE ON CURRICULUM AND PROGRAMS IN INTERNATIONAL AFFAIRS

W. H. Kraus (*Chairman*), J. W. Brewer, R. H. Davison, R. S. Jordan, H. M. Merriman, J. N. Mosél, Benjamin Nimer, J. W. Skinner

\* Professors, Associate Professors, Assistant Professors, and Instructors (full-time) constitute the Faculty. Faculty and Staff of Instruction for the academic year 1964-65.  
† The Dean and Assistant Dean of the School and the Assistant Dean (Programs in International Affairs) are ex officio members of all committees.

## DIVISION OF AEROSPACE STUDIES

*Director A. E. Reiser*

### **Staff of Instruction\***

*Professor A. E. Reiser*

*Assistant Professors W. E. Adams, D. R. Henriquez*

*Instructors A. F. Nassner, C. C. Smarr, C. R. Young*

### **THE SENIOR AIR FORCE RESERVE OFFICERS' TRAINING CORPS PROGRAM (AFROTC)**

The purpose of the Senior Air Force ROTC Program is to prepare selected college students for service as commissioned officers in the United States Air Force through a two-year elective program of military and professional education designed to develop those skills and attitudes vital to the career professional officer.

#### **OBJECTIVES OF AIR FORCE ROTC**

To select and motivate qualified cadets who desire to serve in the United States Air Force.

To provide that professional education and military training which will develop in the cadet the skills, attitudes, sense of professionalism, and background knowledge of military affairs essential to his progressive development as an officer in the United States Air Force.

To develop in the cadet by precept, example, and participation the attributes of character, personality, and attitude necessary for Aerospace leadership.

To select and motivate cadets for career fields as specifically required by the United States Air Force.

#### **PROGRAM DESCRIPTIONS, BENEFITS, AND MILITARY SERVICE OBLIGATIONS**

The Senior Air Force ROTC Program consists of a military training course at an Air Force base and a two-year Professional Officer Education Program on campus. (See pages 158-59 for course descriptions.) Between the sophomore and junior years, applicants without prior military service or ROTC training must attend a six-week Field Training Course to qualify for entry into the Professional Officer Education

\* Staff of Instruction for the academic year 1964-65



Program. Veterans or students with two years credit in a lower division Senior ROTC Program may enter directly into the Professional Officer Education Program. These students must attend a four-week Field Training Course between the junior and senior years or after the senior year at the student's option. During these periods of military training, students receive approximately \$120 plus food, lodging, and travel expense. Upon enrollment in the Professional Officer Education Program, the cadet receives a retainer pay of \$40 a month for 10 months a year for two years. Uniforms and textbooks are provided free for all Aerospace Studies courses.

Cadet candidates for pilot training are afforded an opportunity to take 36 hours of flying instruction, at government expense, in the senior year. The flying instruction is given by an FAA approved flying school and is creditable toward a private pilot's license.

Upon successful completion of the Senior Air Force ROTC Program and University Bachelor's degree requirements, the cadet is commissioned a Second Lieutenant, United States Air Force. He is obligated to serve on active duty for a period as specified by the Secretary of the Air Force (at present four years for nonrated officers and five years for officers who receive pilot or navigator training.)

In the senior year, a cadet may apply for delay from entry into active military service to continue his education toward an advanced degree.

#### ELIGIBILITY FOR ADMISSION TO ADVANCED TRAINING AND APPLICATION PROCEDURES

To be eligible for entry into the Senior Air Force ROTC Program at The George Washington University, a student must (1) be enrolled in the University at the time of entry and have a minimum of two years remaining before graduation; (2) be a citizen of the United States; (3) be physically and mentally qualified; (4) have completed successfully the first two years of a four-year Senior ROTC Program, or, the six-week Field Training Course, or have prior military service; (5) be selected by the Director of the Division of Aerospace Studies; (6) enlist in the Air Force Reserve; (7) contract to serve for a period as required by the Program; and (8) agree in writing that he will accept an appointment, if offered, as a commissioned officer in the United States Air Force.

Veterans and students with two years credit in a lower division Senior ROTC Program seeking enrollment in the Senior Air Force ROTC Program should submit their applications to the Director of the Division of Aerospace Studies prior to registration for the semester of enrollment desired. All other students should (1) between March 20 and April 20 of the freshman year, request authorization from the Director to take the Air Force Officer Qualification Test (AFOQT); (2) take the AFOQT in May as scheduled by the Director; (3) receive notification of test results between July 1 and October 10 of the sophomore year; (4) take the Air Force Medical Commissioning Examination between November 1 and February 15, as scheduled by the Director; (5) be interviewed by the Director in February; (6) receive orders and instructions for attending the Field Training Course by May 15; (7) attend the field training in June (1st session) or in August (2d session); (8) enroll in the Professional Officer Education Program and enlist in the Air Force Reserve in September of the junior year. (Within certain limitations, exceptions may be made for students who, for justifiable reasons, are unable to complete the AFOQT and medical exams by the time schedule noted above.)

#### SELECTIVE SERVICE DEFERMENT

Cadets are automatically deferred from induction under the Selective Service Act of 1951 while enrolled in the Air Force Senior ROTC Program and enlisted in the Air Force Reserve.

#### STUDENT HONORARY MILITARY SOCIETIES

*The Arnold Air Society.*—A national honorary military society of qualified Air Force Senior ROTC Program cadets established to further the mission, traditions, and concepts of the United States Air Force as a means of national defense, to promote American citizenship, and to create a close and more rewarding relationship among the Air Force ROTC cadets. The national organization founded in 1947, was named in honor of the late General of the Air Force Henry Harley Arnold. The local squadron established in 1952, was named in honor of General Carl Spaatz (Retired), the first Chief of Staff of the United States Air Force. All Air Force Senior ROTC Program cadets at The George Washington University are eligible for selection to membership. Members are authorized to wear a blue and gold aiguillette and ribbon on their cadet uniforms.

*National Angel Flight.*—The National Angel Flight is a social honorary auxiliary for college women who wish to promote interest in the United States Air Force and the Air Force Senior ROTC Program. The National Angel Flight is sponsored by the Arnold Air Society. Selection for membership is open to all female University students.

#### REGULATIONS

*Cadets and students in the Division of Aerospace Studies are subject to and are expected to familiarize themselves with the University regulations stated on pages 15-24 and 43-48; the regulations of the college, school, or division in which enrolled; and the regulations of the United States Air Force pertaining to Senior Air Force ROTC Program cadets. Individual copies of Cadet Regulations are issued upon enrollment.*

### THE SUMMER SESSIONS

During the summer of 1965, Columbian College of Arts and Sciences; the School of Government, Business, and International Affairs; and the Division of University Students offer courses in two 5-week sessions, with some graduate seminars and courses extending over an 8-week period; the Law School and Graduate School of Public Law offer courses in two 6-week sessions and one 13-week session; and the School of Education offers courses in a 6-week session and three 3-week workshop sessions.

For a complete statement concerning summer-term work, see the Summer Sessions catalogue.

## ADMINISTRATIVE UNITS

*Health Services* \* *University Physicians* R. B. Castell (*Director*), H. L. Pugh; *University Surgeon* J. B. Harrell; *Associate University Physicians* Alfred Brigulio, Margaret Callan, J. W. McTigue (*Eye*), F. F. Dyer, G. T. Economos, H. O. House (*Nose and Throat*); *Associate University Surgeon* D. C. Wherry; *Nurse* Anne Hoffman

The Health Services Staff assists students with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open from 9 A.M. to 5 P.M., Monday through Friday, during the academic year and Summer Sessions, with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge. For night and weekend emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Services, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.

Medical privileges include: (1) physical examination of all students who are applicants for courses in Physical Education; † (2) three visits in any one illness by a member of the Health Services Staff, office or residence (District of Columbia); (3) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Services. ‡ All additional hospital charges for operating room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye

\* For the academic year 1964-65.

† A charge for a special physical examination is made by the University if a student fails to appear for a physical examination during the period set for this purpose.

‡ See rule (5) for exception.



refraction and provision of glasses; orthopedic examinations and application of cast or other appliance; laboratory and X-ray work; and surgical operations must be paid by the student.

This medical benefit applies only to illness or disability incurred while currently enrolled in the University. It does not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Services is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Services has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each semester; (5) hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the physical education departments.

Paul Vernon Bissell, *Director*

## *Veterans Education*

The personnel of the Office of the Dean of Men act as advisers to veterans and war orphans and in a liaison capacity between the University and the Veterans Administration. This Office should be consulted concerning educational benefits before applying to the Veterans Administration for certification. The Veterans Administration is located at 1717 Massachusetts Avenue NW., Washington, D. C. 20421.

### **PUBLIC LAW 634 (WAR ORPHANS' EDUCATIONAL ASSISTANCE ACT)**

A child of a person who died of a disease or injury incurred or aggravated while on active duty in the Armed Forces during World War I, World War II, or the Korean Conflict; or a child of a person who has a total disability, permanent in nature, resulting from a service connected disability; or a child of a person who died as a result of such a disability, may be eligible for educational assistance under this Act, if certain age requirements are met. In the case of a child who has not reached the age of majority, his guardian must make application for him to the Veterans Administration.

### **PUBLIC LAW 550 (KOREAN GI BILL)**

Benefits under Public Law 550 terminated on January 31, 1965.

### **PUBLIC LAWS 16, 894, AND 87-815 (VOCATIONAL REHABILITATION)**

Disabled veterans desiring vocational rehabilitation under these laws should apply to the Veterans Administration for approval of their training objectives at least sixty days prior to registration.

## COMMUNITY AND UNIVERSITY SERVICES

*Reading Center* Mary Ellen Coleman, *Director*; Joanne Parker, *Assistant Director*

The Reading Center, 2018 I Street NW., offers individual diagnostic and corrective services for all levels: primary, elementary, secondary, and adult. In addition special reading improvement classes are conducted on the high school and adult level.

A complete diagnosis includes psychological tests; vision, hearing, and dominance tests; and the various reading and spelling tests. Results are interpreted and a written report is presented in conference with the parents or the individual.

The special reading classes for high school students and adults are offered throughout the year at stated intervals. Special classes for study skills and spelling are also available. Emphasis is placed on improvement of vocabulary, speed, comprehension, and study skills. Machines such as the tachistoscope, rate accelerator, and controlled reader are also used for increasing speed of comprehension.

*Reading Clinic.*—The fee for individual diagnosis is \$45; for individual instruction, \$6 a lesson; for semi-individual instruction, \$5 a lesson; for instruction in small groups with common reading difficulties, \$3.75 a lesson.

*Reading Improvement.*—Classes are offered for students on the high school, college, and college graduate levels. Students are grouped according to needs, and emphasis is placed on comprehension, vocabulary, study skills, spelling, and speed as needed. The fee for full-time students currently registered in the University is \$45 a semester; for other clients, \$75 for twenty class periods.

All fees are payable in advance at the Office of the Cashier.

C. W. Pettit, *Director*

### *Speech Clinic*

The Speech Clinic, Lisner Auditorium, 730 Twenty-first Street NW., offers diagnostic and corrective work for children and adults with such speech difficulties as stuttering, lisping, cleft palate, cerebral palsy, aphasia, foreign accent, voice, and articulatory problems.

*Fees.*—There is no charge for the diagnosis. The fee for individual instruction is \$7 an hour; for group instruction, \$4 an hour. Fees are payable at the Office of the Cashier.

E. L. Phillips, *Director*

### *Psychological Clinic*

The George Washington University Psychological Clinic, 718 Twenty-first Street NW., offers services which are available primarily to students enrolled in the University and secondarily to high school students and to adults in the community. The latter are selected by the Clinic in accordance with training and research interests of the Clinic Staff.

The services are designed to assist individuals in the evaluation of their educational, personal, and social lives; diagnose academic difficulties and provide remedial measures such as study habits instruction and programmed instruction; and refer individuals to qualified agencies for assistance with problems not handled by the Clinic. Individual psychotherapy is available.

The Clinic also provides special assessments including: diagnostic measures prescribed by the School of Engineering and Applied Science, admissions tests for the University and for other selected educational institutions, and some selected assessments for business and industry.

*Fees.*—For students who are currently registered as degree candidates in the University, the fee is \$10; for students currently enrolled in the University but not as degree candidates, the fee is \$40; for graduates of the University, \$40; for community clients, \$65. Fees for specialized testing are dependent upon the services involved. All fees are payable at the Office of the Clinic.





## STUDENT LIFE

**Residence Halls** Complete information concerning the University's residence halls is available at the Office of the Dean of Men or the Office of the Dean of Women, The George Washington University, Washington, D. C. 20006.

Information concerning off-campus housing near the University may be obtained at the Office of the Dean of Men. The reservation of rooms in private houses must be made by students.

Admission to the University does not include a room reservation. A separate application for a room should be made well in advance (for the fall semester by May 10, or in the case of later admissions within two weeks after notification by the University). Rooms are leased for the academic year, and a deposit of \$100, which is credited toward the fall semester room charge, is required. If notice of withdrawal or cancellation of room reservation is received prior to June 1, \$50 of the deposit will be refunded. No refunds will be made after June 1, regardless of the date of application. Room rentals are payable in advance by the semester.

### 1964-65 RESIDENCE HALL RATES FOR TWO SEMESTERS (SUBJECT TO CHANGE)

	Room and Food Service	Room only
<b>For Men:</b>		
Adams Hall		
double room .....	\$900	—
triple room .....	850	—
Crawford Hall .....	900	—
Calhoun Hall .....	900	\$400
Madison Hall (Graduate and Professional Students) .....	920	420
Welling Hall .....	820	320
<b>For Women:</b>		
Women's Residence Hall .....	\$950	—
Strong Hall		
double room .....	950	\$450
single room .....	1,035	535

## FOOD SERVICE

Residents of the Women's Residence Hall and all resident freshman men under twenty-one are required to participate in the Food Service Plan. The Food Service Plan is optional for all other residents. Meals may be taken either at the Women's Residence Hall or in the Residence Hall dining room at the Student Union. Well-balanced meals are served cafeteria style seven days per week (20 meals). Food service payment does not cover University holidays or vacation periods.

All unmarried women students under twenty-one years of age and enrolled for twelve or more hours of academic work during the fall or spring semester or six or more hours during a summer session are required to live in the University residence halls or at home with their parents. Upon written approval of their parents and the permission of the Dean of Women, freshman women may live with immediate relatives and upperclass women may live with contemporaries of their parents. Under no circumstances may an unmarried woman student under twenty-one years of age taking a full academic program live in an apartment with her contemporaries.

All unmarried freshman men under twenty-one years of age and enrolled for twelve or more hours of academic work during the fall or spring semester or six or more hours during a summer session are required to live in the University residence halls, or at home with their parents or guardians. They are assigned triple rooms in Adams Hall or double rooms in Crawford Hall. In exceptional cases permission to live elsewhere may be granted by the Dean of Men.

The Student Union, 2125 G Street NW., and the Student Union Annex, 2127 G Street NW., are centers of student life on the University campus. The cafeteria on the first floor of the Union building serves breakfast, lunch, and dinner as well as snacks. The second floor is reserved as a dining hall for resident students, and the third floor features a modern vendeteria and delicatessen. The University Ticket Office, on the first floor, handles the tickets for all nonathletic University events and outside events offering student rates. The Student Union Annex houses the Student Activities Office which maintains information concerning student organizations and campus events. The meeting rooms and offices for the Student Council, other campus organizations, and student publications are also found in the Annex. The facilities of the Student Union make it possible for the nonresident student to participate more fully in campus life.

The University Book Store is in a separate building at the quad entrance to the Union. The Book Store carries a wide selection of school supplies and sundry items in addition to text books for all courses.

For details see "Health Services," pages 146-47.

The University recognizes the contribution that religion makes to the life of its students and encourages them to participate in the various religious organizations of their own choice. Catholic, Jewish, and Protestant bodies sponsor these groups and form a link between the University and the religious community. The advisers of the religious organizations are available for counseling.

*Student Union*

*University Book Store*

*Health Services*

*Religious Life*

#### UNIVERSITY CHAPEL

The University Chapel is maintained as a nonsectarian service of worship for the University community. The service is held Wednesday of each week from 12:10 to 12:30 o'clock at 1906 H Street NW. Among the guest speakers are representative clergymen of Washington. The Director of University Chapel is available for counseling and conference.

#### *The Placement Office*

The Placement Office, 2114 G Street NW., provides assistance to students and alumni seeking full-time, part-time, temporary, or permanent employment. The Office maintains a registry of positions available in many fields, both locally and nationally, and refers qualified applicants for consideration. The Office administers the On-Campus Industrial and Government Recruitment Interview Program for seniors and graduate students, in which well over 150 private companies, as well as certain government agencies, participate. This program offers outstanding employment opportunities to persons seeking career positions.

Students and alumni interested in placement are asked to register in person at the Office and to select from written descriptions of current openings positions for which they wish referral. Those interested in planning careers are invited to study the information on career fields and the brochures of business, industry, and government, which are on display in advance of campus visits by recruiting officers. The Office also provides individual counseling to students and alumni wishing career guidance.

The Placement Office is open from 9:00 a. m. to 5:00 p. m., Monday through Friday.

#### *International House*

International House, 2110 G Street NW., is the social center for students from foreign countries. A series of teas, dances, and other forms of entertainment, and the use of club rooms and lounge enable students to become acquainted and feel at home in the University.

The International Students' Society welcomes as members students from other lands as well as North American students.

The Director of Foreign Student Affairs, whose office is in International House, is available for advice and guidance.

#### *Student Activities*

The University maintains the offices of the Dean of Men and the Dean of Women, for the guidance of students in all nonacademic phases of student life, such as student activities, social life, and housing. The deans are available for individual counseling concerning personal adjustment to university life.

#### STUDENT GOVERNMENT

*Student Council.*—The University believes in encouraging the development of a sense of civic responsibility in its students by delegating to them such authority in student activities as is consistent with established policy and regulations. To this end, the organization of the University includes the Student Council, which, under the guidance of the Dean of Men and Dean of Women, is responsible for the conduct of all student activities. The Student Council is elected annually by the student body.

*Committee on Student Life.*—The Committee on Student Life has the power to review the acts of all student organizations, including the



Student Council, and set aside acts that are contrary to established policy and regulations of the University or the Committee. This Committee is given authority to approve or disapprove the establishment of any proposed organization on campus.

#### ELIGIBILITY FOR STUDENT ACTIVITIES

Any student registered in the University is eligible to participate in nonathletic student activities of the University; however, a student having a scholastic average of less than 2.00 is not eligible to be:

1. A member of the Band, Dance Production Groups, Drama Productions, Enosinian Debating Society, Glee Club, Cheerleaders, Student Council, Religious Council, Panhellenic Council, Interfraternity Council, Student Life Committee, Residence Hall Councils, or any publications staff.
2. An officer, permanent committee chairman, or member of the executive board of any activity.

The rules and policies of the Southern Conference govern participation in intercollegiate athletics.

The control and administration of all student activities are outlined in a separate bulletin called "Information and Regulations Governing Student Activities."

#### SPORTS

The University is a member of the Southern Conference and the National Collegiate Athletic Association. Its teams participate in intercollegiate contests in football, basketball, baseball, tennis, golf, rifle, and crew.

The University maintains a complete program of intramural sports for both men and women. The men's program is conducted by the Intramural Council. The Women's Athletic Association and Intersorority Athletic Board cooperate with the department of Physical Education in conducting the women's intramural and informal extramural sports program in tennis, hockey, basketball, canoeing, rifle, swimming, golf, bowling, and badminton.

#### PERFORMING ARTS

Students may participate in dance, drama, forensics, music, and radio broadcasting through the following organizations: Dance Production Groups I, II, III (Modern Dance) and Folk Dance; Enosinian Debating Society; Folk Music Society; Station WRGW; University Chorus, Madrigal Singers, Orchestra; and University Players. Each of these groups presents programs during the academic year.

With the cooperation of the Curator of Art, an annual student art exhibit is presented.

#### ANNUAL EVENTS

*Colonial Program.*—The Student Council sponsors a variety of programs to which all students are invited.

*Recreation Program.*—The Student Council and the Dance Production Groups arrange dances—square, folk, and social—at frequent intervals for all students.

*Concert Program.*—The Student Council sponsors a concert each semester at which nationally known entertainers perform.

*Orchestra Series.*—The University Orchestra offers a series of concerts throughout the academic year.

*Homecoming.*—Scheduled about the middle of the fall semester, Homecoming is the primary festive period of the school year. It includes the Annual Pep Rally, Homecoming Musical, Homecoming Football Game, and Homecoming Dance.

*Religion in Life Program.*—Special emphasis is given to the place of religion in contemporary society in this program of events during the fall and spring semesters. It is sponsored by the University Chapel.

*Holiday Season.*—The University traditionally greets the holiday season with appropriate ceremonies including the lighting of the Christmas tree, the singing of Handel's Messiah, service projects, and the observance of a special Christmas service at the University Chapel.

*May Day.*—This is the traditional time for the award of honors in student activities. Mortar Board and Omicron Delta Kappa announce and present their new members.

#### *Student* HONOR SOCIETIES

##### *Organizations*

*Phi Beta Kappa.*—A national honor society recognizing "outstanding intellectual capacity well employed" in the field of liberal arts and sciences. Senior and junior students who are candidates for the degree of Bachelor of Arts or Bachelor of Science in Columbian College and who have shown broad cultural interests, distinguished scholarly achievement, high character, general promise, and scholarly ideals may, to a number not exceeding 15 per cent of a class, be elected to membership by the Faculty members of the Alpha Chapter of the District of Columbia.

*Sigma Xi.*—A national scientific honor society, the purpose of which is to encourage original investigation in science, pure and applied. Outstanding graduate students in the sciences are eligible for full membership, and undergraduates who have shown marked ability in research may be elected to associate membership.

*Aesculapian Society.*—An honorary premedical fraternity.

*Alpha Kappa Delta.*—A national sociology society.

*Alpha Lambda Delta.*—A national fraternity established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman women who attain a scholastic average of at least 3.50.

*Arnold Air Society.*—A national Air Force ROTC society for advanced cadets.

*Delphi.*—An intersorority honorary society.

*Delta Phi Epsilon.*—A foreign service fraternity.

*Delta Sigma Rho-Tau Kappa Alpha.*—A national forensic society.

*Gate and Key.*—An intrafraternity honorary society.

*Iota Sigma Pi.*—A national chemical society for women.

*Mortar Board.*—A national society for senior college women, stressing leadership, scholarship, and service.

*National Angel Flight.*—A national honorary society established to further the ideals of the aerospace age.

*Omicron Delta Kappa.*—A national fraternity emphasizing leadership in extracurricular activities.

*Order of Scarlet.*—A service honorary society for sophomore and junior men.

*Pershing Rifles.*—A national Air Force ROTC society.

*Phi Epsilon Phi.*—A national botany fraternity.

*Phi Eta Sigma.*—A national fraternity, established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman men who attain a scholastic average of at least 3.50.

*Phi Sigma Tau.*—A national philosophy honor society.

*Pi Delta Epsilon.*—A national collegiate journalism fraternity.

*Pi Epsilon Delta.*—A national drama honorary fraternity.

*Pi Gamma Mu.*—A national social-science society.

*Psi Chi.*—A national psychology fraternity.

*Sigma Alpha Eta.*—A national speech and hearing fraternity.

*Sigma Delta Pi.*—A national Spanish honor society.

*Sigma Pi Sigma.*—A national physics fraternity.

*Tassels.*—A service honorary society for sophomore women.

Alpha Chi Sigma (chemistry), Alpha Kappa Psi (commerce and economics), Association for Hospital Administration, Student National Education Association, Phi Delta Gamma (graduate), Phi Delta Kappa (education), Pi Lambda Theta (education), Society for the Advancement of Management.

#### *Professional Organizations*

#### SOCIAL FRATERNITIES

Sigma Chi, Kappa Sigma, Phi Sigma Kappa, Sigma Alpha Epsilon, Sigma Phi Epsilon, Phi Sigma Delta, Sigma Nu, Tau Kappa Epsilon, Pi Kappa Alpha, Tau Epsilon Phi, Alpha Epsilon Pi, Delta Tau Delta.

#### SOCIAL SORORITIES

Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Kappa Delta, Phi Sigma Sigma, Zeta Tau Alpha, Kappa Kappa Gamma, Delta Gamma, Kappa Alpha Theta, Alpha Epsilon Phi, Sigma Delta Tau.

#### DEPARTMENTAL CLUBS

Case Club, El Club Español, Enosinian Debating Society, Le Cercle Français, Lester F. Ward Sociological Society, Phi Sigma Tau (philosophy), Russian Club, Women's Athletic Association.

#### RELIGIOUS ORGANIZATIONS

Baptist Student Union, B'nai B'rith Hillel Foundation, Christian Science



Organization, Eastern Orthodox Club, Lutheran Student Association, Newman Club, Student Christian Fellowship, Student Episcopal Association, Unitarian Club, United Christian Fellowship, Wesley Foundation, and a Religious Council comprised of representatives of all religious organizations.

#### STUDENT PUBLICATIONS

*The Cherry Tree* (the annual), *The University Hatchet* (weekly newspaper), *The Potomac* (literary magazine), *The Student Handbook*.

#### OTHER ORGANIZATIONS

Alpha Theta Nu (scholarship winners), Big Sisters, Cheerleaders, Chess Club, Colonial Boosters, Foggy Bottom Sports Car Club, Interfraternity Council, International Students' Society, Intersorority Athletic Board, Junior Panhellenic Association, Old Men, Residence Hall Councils, Rifle Club, Senior Panhellenic Association, Station WRGW, Student Council, University Pep Band, Wandering Greeks, Young Democrats Club, Young Republican Club.



## COURSES OF INSTRUCTION

ON THE FOLLOWING PAGES of this CATALOGUE, under the alphabetically arranged names of the departments of instruction, are listed the courses of instruction offered by the University in the summer of 1965 and in the academic year 1965-66. The courses as here listed are subject to change. The University reserves the right to withdraw any course announced.

Classes are scheduled in the morning, afternoon, and evening. Evening and daytime sections of the same course are identical, are taught by the same staff of instructors, and carry the same amount of credit. By taking the evening and summer classes and extending the time of study beyond the usual four years, a part-time student may complete the requirements and obtain a degree.

*Hours of  
Instruction*

*First-group courses.*—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. With the approval of the adviser and the dean, they may also be taken by juniors and seniors. In certain instances, they may be taken by graduate students to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

*Explanation of  
Course Numbers*

*Second-group courses.*—Courses numbered from 101 to 200 are planned for students in the junior and senior years. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the dean responsible for the graduate work and by the instructor and when the completion of additional work has been certified by the instructor.

*Third-group courses.*—Courses numbered from 201 to 300 (in Columbian College of Arts and Sciences and the School of Government, Business, and International Affairs), courses numbered 201 to 400 (in

the School of Education) are planned primarily for graduate students. They are open, with the approval of the instructor to qualified seniors; they are not open to other undergraduates.

*Fourth-group courses.*—Courses numbered 301 to 400 in Columbian College of Arts and Sciences are limited to graduate students; but they are primarily for doctoral candidates. In the School of Education fourth-group courses, numbered 401 to 500, are limited to graduate students with Master's degrees from accredited institutions.

*Amount of Credit* The number of semester hours of credit given for the satisfactory completion of a course is, in most cases, indicated in parentheses after the name of the course. Thus, a year course giving 3 hours of credit each semester is marked (3-3), and a semester course giving 3 hours of credit is marked (3). A semester hour usually consists of the completion of one fifty-minute period of class work or of one laboratory period a week for one semester.

## Accounting

See "Government and Business."

## Aerospace Studies\*

*Professor A. E. Reiser (Chairman)*

*Assistant Professors W. E. Adams, D. R. Henriquez*

*Instructors A. F. Nassner, C. C. Smarr, C. R. Young*

*Commission in the United States Air Force.*—Upon being awarded a Bachelor's degree and upon the satisfactory completion of the Senior Air Force Reserve Officers' Training Program as prescribed by law and regulations, the graduate will be appointed Second Lieutenant, United States Air Force.

### AIR FORCE ROTC SIX-WEEK FIELD TRAINING PROGRAM

- 50 **Six-week Field Training Course**—Between Sophomore and Junior Years The Staff

An Air Force ROTC Field Training Course conducted at an active continental Air Force base. Consists of military, survival, and physical training; air base orientation; aerospace weapons and support systems; guidance and evaluation. Required for nonveterans and students with less than two years of credits in a Senior ROTC Program (lower division) for enrollment in the Professional Officer Education Program.

### AIR FORCE PROFESSIONAL OFFICER EDUCATION PROGRAM

- 101-2 **Growth and Development of Aerospace Power**—Junior Year (3-3) Henriquez

A study of the nature of war; development of airpower in the United States; mission and organization of the Department of Defense; Air Force concepts, doctrine, and employment; astronautics and space operations; and the future development of aerospace power. Includes the United States space program, vehicles, systems, and problems in space exploration. (Academic year—day.)

\* Staff of Instruction for the academic year 1964-65



- 120 **Four-week Field Training Course—Between Junior and Senior Year** The Staff

An Air Force ROTC Field Training Course conducted at an active continental Air Force base. Consists of familiarization flying, physical and military training, individual weapons, Air Force base activity and equipment, field exercises, air base problems and leadership training. Mandatory for cadets enrolled in the program who were not required to take Aerospace Studies 50. (Cadets may elect to defer this training until after the senior year.)

- 151-52 **The Professional Officer—Senior Year (3-3)** Adams

Professionalism, leadership, and management. The meaning of professionalism, professional responsibilities, the military justice system, leadership theory, functions and practices, management principles and functions, problem solving, management tools, practices and control. (Academic year—day.)

- 153 **Flight Instruction Program—Senior Year (1)** Reiser

This course consists of 40 hours of ground school instruction by the Department of Aerospace Studies and 36 hours of flight instruction at a nearby civilian contract flight school. For AFROTC cadet pilot candidates only. (Fall—day.)

## American Thought and Civilization

The American Literature faculty of the English department administers two interdepartmental degree-granting programs:

*Bachelor of Arts with a major in American Thought and Civilization (Field-of-Study).* See page 205.

*Master of Arts in the field of American Literary and Cultural History.*—See page 206.

The faculty responsible for the above programs also administers one special course:

- 101 **American Civilization (3)** Walker and Staff

Lecture (1¼ hours), discussion (1¼ hours). This is a University-sponsored course designed to offer all students, toward the end of their residence, a broad assessment of the culture in which they are to live and to work. Contemporary problems and characteristics of American society are presented against the background of the humanities and social sciences. Each lecture is delivered by an authority on a particular subject—political, social, and economic problems, international attitudes, important trends in literature, science, the arts, religion, and philosophy. Discussion sections will combine lecture materials with assigned readings in order to achieve an ordered sense of the over-all state of American civilization. Prerequisite: successful completion of 85 semester-hours credit. Open to undergraduate and graduate students, but available for graduate credit only with the approval of the department and college concerned. Not available for graduate credit in Columbian College of Arts and Sciences. Recommended as an elective, but not to be taken as part of any major program without specific departmental approval. (Fall—late afternoon; spring—evening.)

COURSE OFFERED IN AMERICAN STUDIES INSTITUTE—SUMMER 1965

- 150 **Material Culture of the United States (3)**

## Anatomy\*

*Professors* I. R. Telford (*Chairman*). Paul Calabrisi

*Associate Professors* F. D. Allan, T. N. Johnson, J. B. Christensen

*Assistant Professor* J. C. Bartone

*Master of Science in the field of Anatomy.*—Prerequisite: a Bachelor of Arts or Bachelor of Science degree from this University, or the equivalent, with a major in a biological science or Chemistry. The undergraduate program must include the following courses, or the equivalent: Biological Sciences 1-2, 103-4; Chemistry 11-12, 21, 151-52; Physics 1-2. Biochemistry 221-22 is recommended as an elective.

Required: the general requirements, pages 69-71, including Anatomy 203, 204, 205, 221-22, 295-96, 299-300, and graduate courses in biochemistry, physiology, or related fields selected with the approval of the Department. It is not always possible to arrange courses and research so that the student can be assured of completing all the required work in one academic year.

*Doctor of Philosophy.*—See pages 75-84.

- 201 **Gross Anatomy (8)** Calabrisi and Staff  
Regional dissection of the human body, supplemented with lectures and quiz sections. Study of X-ray anatomy to emphasize the functional aspects of the position, shape, and relation of the viscera and skeletal components. Laboratory fee, \$30. (Fall—as arranged.)
- 203 **Human Embryology (1)** Allan and Staff  
The origin and development of the human body. Special emphasis on the value of embryology in interpreting anatomical anomalies and variations as seen on gross dissection, surgery, obstetrics, and pathology. (Fall—as arranged.)
- 204 **Neuroanatomy (2)** Johnson and Staff  
The macroscopic and microscopic study of the central nervous system and the special sense organs. Emphasis on such dynamic aspects as development, pathways, lesions, etc. Laboratory fee, \$13. (Fall—as arranged.)
- 205 **Microscopic Anatomy (3)** Telford and Staff  
Study of the detailed minute structure of cells, tissues, and organs of the human body, with emphasis on the relation of structure to function. Recognition and interpretation of historical sections tested by practical examinations. Laboratory fee, \$13. (Fall—as arranged.)
- 221-22 **Seminar (1-1)** Telford and Staff  
Research reports and discussions of special topics by the Staff and graduate students. For graduate students. Medical students are encouraged to attend. (Academic year: 1 hour a week—as arranged.)
- 249-50 **Introduction to Medical Research † (3-3)** The Staff  
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—anatomical, statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, \$7.50 a semester. (Academic year—W 1-5 pm.)
- 252 **Physical Anthropology (1)** Stewart, Angel  
An elective course for medical students; open to a limited number of graduate students. Variations in man and factors affecting them. Human evolution and racial differences. Anatomy and culture of ancient man. (Spring—as arranged.)

\* Staff of Instruction for the academic year 1964-65

† This is an interdepartmental course. The student should register in the department directing his research



- 254 **Fetal Anatomy (1)** Allan  
 An elective course for medical students; open to a limited number of graduate students. Dissection of an early and a late human fetus. Comparison of fetal and adult structures. Discussions stressing the embryonic significance of important structures. Laboratory fee, \$8. (Spring—as arranged.)
- 256 **Human Genetics (1)** Jacobson  
 An elective course for medical students; open to a limited number of graduate students. General principles of genetics, cytogenetics techniques, aneuploidy in man and its significance, biochemical aspects of heredity, and genetic counseling. (Spring—as arranged.)
- 260 **Gross Anatomy of Upper Extremity (2)** Calabrisi, Christensen  
 An elective course for medical students; open to a limited number of graduate students. Detailed dissection of the region, supplemented by X-ray anatomy; discussions and assigned reading. Laboratory fee, \$10. (Spring—as arranged.)
- 262 **Gross Anatomy of Lower Extremity (2)** Calabrisi, Christensen  
 An elective course for medical students; open to a limited number of graduate students. Detailed dissection of the region, supplemented by X-ray anatomy; discussions and assigned reading. Laboratory fee, \$10. (Spring—as arranged.)
- 264 **Gross Anatomy of Head and Neck (2)** Calabrisi, Christensen  
 An elective course for medical students; open to a limited number of graduate students. Detailed dissection of the region, supplemented by X-ray anatomy; discussions and assigned reading. Laboratory fee, \$10. (Spring—as arranged.)
- 266 **Gross Anatomy of Thorax and Abdomen (2)** Calabrisi, Christensen  
 An elective course for medical students; open to a limited number of graduate students. Detailed dissection of the region, supplemented by X-ray anatomy; discussions and assigned reading. Laboratory fee, \$10. (Spring—as arranged.)
- 268 **Gross Anatomy of Pelvis and Perineum (2)** Calabrisi, Christensen  
 An elective course for medical students; open to a limited number of graduate students. Detailed dissection of the region, supplemented by X-ray anatomy; discussions and assigned reading. Laboratory fee, \$10. (Spring—as arranged.)
- 270 **Dissection of the Human Brain (1)** Johnson  
 An elective course for medical students; open to a limited number of graduate students. Dissection of the major pathways and nuclei of the human brain, with a consideration of the ventricular system. Conferences and assigned reading. Laboratory fee, \$10. (Spring—as arranged.)
- 272 **Autonomic Nervous System (1)** Allan  
 An elective course for medical students; open to a limited number of graduate students. Lectures on the development, histology, gross anatomy, and function of central and peripheral components of the autonomic nervous system. Relation to visceral afferent pathways defined and role of pathways in visceral and referred pain considered. (Spring—as arranged.)
- 274 **Tissues of the Body (1)** Telford  
 An elective course for medical students; open to a limited number of graduate students. Weekly lecture on basic concepts in anatomy, with special emphasis on primary tissues of the body—their histogenesis, growth processes, generalized and specific functions, regenerative capacities, aging and death. (Spring—as arranged.)
- 276 **Microscopic Research Techniques (1)** Bartone  
 An elective course for medical students; open to a limited number of gradu-



ate students. Various histological and histochemical methods of research. Specified laboratory techniques in the preparation of tissues for microscopic observation. Laboratory fee, \$8. (Spring—as arranged.)

- 295-96 **Research** (arr.) The Staff  
 Fee to be arranged. (Academic year—as arranged.)
- 299-300 **Thesis** (3-3) The Staff

## Anthropology\*

*Professorial Lecturers* J. L. Angel, S. T. Boggs, T. D. Stewart

*Assistant Professors* P. F. Gallagher (*Chairman*), Ruth Krulfeld, R. K. Lewis, D. E. Walker, Jr.

*Bachelor of Arts with a major in Anthropology (Departmental).*—Prerequisite: the Arts and Letters curriculum, page 57, including Anthropology 1-2.

Required: in addition to the general requirements stated on pages 63-67, twenty-four semester hours in Anthropology, which must include 192, as well as second-group Anthropology courses in each of the following categories: Aspects of Culture (courses numbered in the 150's), Linguistics (courses numbered in the 160's), Ethnology (courses numbered in the 170's), and Physical Anthropology and Archeology (courses numbered in the 180's). Students in the senior year are encouraged to elect courses from the following: Biological Sciences 108; English 125; Geology 257-58; Mathematics 101; Philosophy 196; Psychology 115, 121; and Statistics 104. Students are normally provided the opportunity to participate in field research conducted each summer by anthropological field schools in states of the American West.

*Master of Arts in the field of Anthropology.*—Prerequisite: the degree of Bachelor of Arts with a major in Anthropology from this University, or the equivalent.

Required: the general requirements, pages 69-71. All courses must be approved in advance by the adviser. The Master's Examination (page 71) must be taken before registration for the second half of the thesis work.

*Master of Arts in the field of Linguistics.*—See pages 258-59, and the departments of Germanic Languages and Literatures and Romance Languages and Literatures.

- First Group** 1-2 **Introductory Anthropology** † (3-3) The Staff  
 (Replaces Anthropology 1 and Anthropology 52)

*First half:* a survey of man's origin, physical evolution, and culture history.  
*Second half:* a survey of the world's cultures, illustrating the principles of cultural behavior. (First half: fall—day and evening; spring—evening.  
 Second half: fall—evening; spring—day and evening; summer 1965—offered as Anthropology 1 *Man, Culture, and Society I* (3).)

- Second Group** 150 **Comparative Value Systems** (3) Krulfeld

An examination of world views, conceptual systems, and value hierarchies of representative cultures throughout the world. (1965-66 and alternate years: spring—day.)

- 151 **Introduction to Primitive Economics** (3) Krulfeld  
 An introduction to the cross-cultural study of the allocation of goods and

\* Staff of Instruction for the academic year 1964-65.

† Anthropology 1-2 is prerequisite to all second group courses.

services, including an examination of primitive subsistence patterns. (1965-66 and alternate years: fall-day.)

- 153 **Psychological Anthropology (3)** Gallagher  
The relevance of psychoanalytic and learning theories to the cross-cultural study of personality. Cultural determinants of personality formation and mental health. (Fall-day; summer 1965.)
- 154 **Mythology and Folklore (3)** Walker  
Unwritten literature as an expression of the imaginative and creative thought of nonliterate peoples; the place of mythology and folklore in social organization, in enculturation, and in social control. (1965-66 and alternate years: spring-day.)
- 155 **Primitive Religion (3)** Walker  
Conceptions of the supernatural in nonliterate societies. An examination of religious beliefs and practices; the interrelatedness of religion, magic, and philosophy. (Fall-day.)
- 156 **Witchcraft and Sorcery (3)** Walker  
Approaches to the analysis of the functions of witchcraft and sorcery among primitives; a survey of extant studies of witchcraft and sorcery with particular attention to their place in social control and organization. (1965-66 and alternate years: spring-day.)
- 157 **Primitive Social Organization (3)** Walker  
Approaches to the analysis of the social organization of primitive peoples; kinship, economic, and political systems; variation of qualitative and quantitative complexity in relation to ecological changes. (Fall-day.)
- 158 **Art and Culture (3)** Krulfeld  
A study of the artist in tribal society, including an analysis of the role of art in culture, and the influences upon the artist, as well as an examination of beliefs and practices associated with art production. (Spring-day.)
- 159 **Ethnoscience (3)** Gallagher  
A comparative study of branches of knowledge, such as astronomy, botany, mathematics, psychology, technology, and zoology, as these are empirically derived and systematically arranged in selected preindustrial societies. (1965-66 and alternate years: spring-day.)
- 161 **Language and Culture (3)** Gallagher  
The structure and semantics of systems of human communication, linguistic change, the influence of language on world view. (Fall-day.)
- 162 **Linguistics in Anthropology (3)** Walker  
The anthropological field use of structural analysis, sounds of language-phonetics and phonemics, techniques of linguistic recording and analysis, field work. (1966-67 and alternate years.)
- 171 **Native Peoples of North America (3)** Gallagher  
A survey of Indian groups representative of each of the culture areas of the continent, stressing the patterned nature of diverse culture responses to universal problems of human existence. (1965-66 and alternate years: fall-evening.)
- 172 **Native Peoples of South America (3)** Gallagher  
A survey of Indian groups representative of each of the culture areas of the continent, stressing the patterned nature of diverse culture responses to universal problems of human existence. (1965-66 and alternate years: spring-evening.)
- 173 **Cultures of the Pacific (3)** Lewis  
A study of the culture, history, and ways of the life of the native peoples of Melanesia, Micronesia, and Polynesia. (1966-67 and alternate years.)

- 174 **Far Eastern Communities (3)** Krulfeld  
The community study approach in anthropology as applied to selected villages in such Asian areas as China, Japan, and Malaysia. (1966-67 and alternate years.)
- 175 **Cultures of Southeast Asia (3)** Krulfeld  
A survey of representative Southeast Asian cultures from primitive groups to high civilizations, stressing the similarities and diversities of patterned cultural responses to basic human problems in one area of the world. (1966-67 and alternate years.)
- 176 **Cultures of the Circumpolar Region (3)** Lewis  
A survey of the various social and economic adaptations to an extreme climate made by the peoples of the northern sub-arctic and arctic regions, stressing diverse cultural solutions to similar problems. (1965-66 and alternate years: fall-evening.)
- 177 **Cultures of the Near East (3)** Lewis  
A study of the geographic environment, language, religion, and social structure of the settled and nomadic peoples of the Near East, with emphasis on the Arab world. (1966-67 and alternate years.)
- 178 **Cultures of South and East Africa (3)** Walker  
The comparative examination of the history, cultural development, and contemporary problems of cultures of southern and eastern Negro Africa. (1965-66 and alternate years: spring-day.)
- 179 **Cultures of West and Central Africa (3)** Walker  
The comparative examination of the history, cultural development, and contemporary problems of cultures of western and central Negro Africa. (1965-66 and alternate years: fall-day.)
- 182 **New World Archeology (3)** Gallagher  
A survey of pre-Columbian culture history, from man's entry into the Americas during the Pleistocene Ice Age until the time of the first European contacts. (1965-66 and alternate years: fall-evening.)
- 183 **Old World Archeology (3)** Gallagher  
A survey of the culture of the history of man exclusive of the Americas, from the earliest hominid cultures to the advanced civilizations and their secondary centers. (1966-67 and alternate years.)
- 186 **Physical Anthropology (3)** Stewart, Angel  
(Formerly Anthropology 152)  
A study of human variation past and present, seen as a product of physical and cultural evolution. (Spring-evening.)
- 192 **Anthropological Theory (3)** Krulfeld  
Analysis of the theoretical postulates and assumptions underlying the development of modern cultural anthropology. (Fall-day.)
- 193 **Anthropological Methods (3)** Walker  
Approaches to library and field research in linguistics, archeology, and ethnography; conceptual bases and bias in the delineation of problems, in the selection, analysis and organization of data, and in the preparation of the final report. (1966-67 and alternate years.)

*Third Group* 262 **Applied Anthropology (3)** Boggs  
The use of anthropological methods and techniques in such specific fields as government, business, law, and medicine. (1965-66 and alternate years: spring-evening.)



- 263 **Culture Contact and Change (3)** Walker  
Western impact on non-Western cultures. The workings and the processes of social change as variant cultures and ethical systems interact. (1966-67 and alternate years.)
- 264 **Museum Techniques (3)** The Staff  
Principles of collection, classification, identification, and interpretation of archeological, paleontological, ethnobotanical, and ethnographic specimens; presentation to the public of the cultural significance of prepared specimens; research and instructional use of the museum. (1966-67 and alternate years.)
- 265 **Cultural Ecology (3)** Lewis  
A cross-cultural examination of the relationship of technology to the natural world. (1965-66 and alternate years: spring—day; summer 1965.)
- 266 **Technology (3)** Krulfeld  
A cross-cultural examination of the form, function, meaning, and use of material culture and the behavior patterns involved in its production. (1965-66 and alternate years: fall—day.)
- 267 **Primitive Economics (3)** Krulfeld  
The comparative study of preindustrial systems of production, distribution, and consumption. An inquiry into the applicability of Western laws of economic analysis to non-Western societies. (1966-67 and alternate years.)
- 268 **Peasant Society (3)** Krulfeld  
A cross-cultural analysis of peasant societies, including an examination of their general features and their manner of functioning within their larger social, economic, and cultural context. (1966-67 and alternate years.)
- 269 **Intercultural Relations of the American Northwest (3)** Walker  
A presentation of the cultural content of and the interrelationships among the Basin, the Plateau, and the Northwest Coast culture areas; the contributions of history and ecology to the development of interareal similarities and differences; analysis of the extant Indian cultures. (1965-66 and alternate years: spring—evening.)
- 295-96 **Research in Anthropology (arr.)** The Staff  
(Academic year—as arranged.)
- 299-300 **Thesis (3-3)** The Staff  
(Academic year—as arranged; summer 1965.)

## Art\*

*Professors* D. C. Kline (*Chairman*), W. A. MacDonald

*Professorial Lecturer* Grace Evans

*Associate Professor* L. P. Leite

*Assistant Professor* D. H. Teller

*Assistant Professorial Lecturer* Fuller Griffith

*Studio Lecturers on the Staff of the Corcoran School of Art* E. M.

Archer, Heinz Warneke, Jack Perlmutter, Alexander Russo, Richard Lafean, Joseph Taney, Don Turano, Clifford Chietto, Albert Davis,

Teruo Hara, Paul Hoffmaster, Francis Luzzatto, Carol Ellis, John

\* Staff of Instruction for the academic year 1964-65.

Gunning, Arthur Iddings, Louis Nolan, John Schoemaker, Arthur Terry, James Twitty, Berthold Schmutzhart, Harold Isen, Malcolm Wright

*Instructor* H. I. Gates

*Instructors (part-time)* Lilien Filipovitch, Richard Madigan

*Bachelor of Arts with a major in* (1) *Art History and Theory*, (2) *Painting*, (3) *Sculpture*, (4) *Design*, or (5) *Ceramics (Departmental)*:

*The major in Art History and Theory*.—Prerequisite: the Arts and Letters curriculum, page 57, or the equivalent, including Art 31–32 and 71–72.

Required: in addition to the general requirements, page 63–67, eighteen semester hours, as follows: Art 101 or 102, 103, 104 or 105, 110, 112, 113 or 114; and twelve semester hours selected from second-group courses, or from third-group courses open to undergraduates with the approval of the instructor. Students intending to major in this field are urged to acquire a reading knowledge of a foreign language, preferably French or German, at the earliest possible convenience.

*American Thought and Civilization 101 American Civilization* is recommended as a senior-year elective for Art History and Theory majors.

*The major in Painting, Sculpture, Design, or Ceramics*:

Required: in addition to the general requirements, pages 63–67, twenty-four semester hours of studio practice; six hours of art history selected from second-group courses or from third-group courses open to undergraduates with the approval of the instructor.

*The major in Painting or Sculpture*.—Prerequisite: the Arts and Letters curriculum, page 57, or the equivalent, including Art 21–22, 31–32 or 71–72, and six hours selected from the following: Art 35–36, 41–42, 51–52, 57–58, 65–66, or 81–82.

*The major in Design*.—Prerequisite: the Arts and Letters curriculum, page 57, or the equivalent, including Art 21–22, 31–32 or 71–72, and 41–42.

*The major in Ceramics*.—Prerequisite: the Arts and Letters curriculum, page 57, or the equivalent, including Art 21–22, 31–32 or 71–72, and 51–52.

Classes in the practice of art with the exception of Art 21–22, 57–58, 121–22, 123–24, 139–40, 143–44, and 162 are held at the Corcoran School of Art.

*Bachelor of Arts with a major in Classical Archeology and Greek (Departmental)*.—This interdepartmental major may be arranged in conjunction with the Department of Classical Languages and Literatures. Prerequisite: the Arts and Letters curriculum, page 57. Greek 13–14, and History 39–40.

Required: in addition to the requirements, pages 63–67, Greek 107, 108; Anthropology 183; Art 101, 102, 111, 116; Philosophy 111. History 109 is strongly recommended as an elective. A reading knowledge of French or German, preferably both, is strongly recommended.

*Master of Arts in the field of Art History and Criticism with concentrations in Classical Art and Archeology, Art of the Americas, Renaissance and Baroque Art, and Contemporary Art*.—Prerequisite: the degree of Bachelor of Arts with a major in Art History and Theory at this University, or the equivalent.

Required: the general requirements, pages 69–71. As much as possible of the twenty-four semester hours in course work should be in third-group courses. A general written examination on the problems in the field of Art History and Criticism; a written thesis embodying the results of research on some specific topic in the history and criticism of art.

*Master of Arts in the field of Museology*.—Prerequisite: the degree of Bachelor of Arts with a major in Art History and Theory at this University, or the equivalent.

Required: the general requirements, pages 69–71. Fifteen semester hours in museum courses: Art 146, 271–72; nine semester hours divided between courses in art history and courses in related fields outside the Department of Art; a general written examination in the field of museology; a written thesis embodying the results of research on some specific aspect of museums or museum work.

*Master of Fine Arts in the field of Painting, Sculpture, or Ceramics.*—Prerequisite: the degree of Bachelor of Arts with a major in Painting, Sculpture, or Ceramics at this University, or the equivalent.

Required: the general requirements, pages 69–71. As much as possible of the twenty-four semester hours in course work should be in third-group courses. A creative thesis in painting, sculpture, or ceramics; a paper discussing some technical phase of the problem illustrated by the thesis.

*Bachelor of Arts in Education with a teaching field in Art.*—Prerequisite: the Education curriculum, page 59.

Required: the Art option and professional courses listed on page 99.

## ART HISTORY AND THEORY

- |       |  |                 |                     |
|-------|--|-----------------|---------------------|
| 1     | <b>Art Appreciation (3)</b>  | Filipovitch     | <i>First Group</i>  |
|       | The language and function of art in its various media; the historical development of styles, aesthetic principles, theories, and the ideas in art through the ages. Primarily for nonmajors. (Fall and spring—day and evening; summer 1965.)   |                 |                     |
| 31–32 | <b>Survey of Western Art (3–3)</b>   | Leite and Staff |                     |
|       | A survey of the arts in the Western World from prehistoric to modern times. A foundation for further study in the history of art. (Academic year—day and evening.)   |                 |                     |
| 71–72 | <b>Introduction to the Arts in America (3–3)</b>   | Kline           |                     |
|       | Painting, sculpture, and architecture of America, with selected references to the crafts and popular arts. <i>First half:</i> from Colonial beginnings to the Republican Age. <i>Second half:</i> from early 19th century to the present. (Academic year—day; summer 1965—Art 72 (3).) |                 |                     |
| 101   | <b>Greek and Roman Architecture (3)</b>  | MacDonald       | <i>Second Group</i> |
|       | (Fall—day and evening.)  |                 |                     |
| 102   | <b>Greek and Roman Sculpture (3)</b>   | MacDonald       |                     |
|       | (Spring—day and evening.)  |                 |                     |
| 103   | <b>Medieval Art (3)</b>  | Evans           |                     |
|       | Architecture, sculpture, and painting from the formative stages of Christian Art in the Byzantine Age through the Romanesque and Gothic periods. (Fall—day.)   |                 |                     |
| 104   | <b>Renaissance Art in Italy I (3)</b>  | Leite           |                     |
|       | The early developments from the 13th to the 15th century. (Fall—day.)  |                 |                     |
| 105   | <b>Renaissance Art in Italy II (3)</b>   | Leite           |                     |
|       | The High Renaissance and Mannerism. (Not offered 1965–66.)   |                 |                     |
| 106   | <b>Renaissance Art in the North (3)</b>  | Leite           |                     |
|       | The painting in the Netherlands, Germany, France, Spain, and Portugal. (Summer 1965.)  |                 |                     |
| 107   | <b>Eighteenth Century Art in Europe (3)</b>  | Evans           |                     |
|       | The development of painting, sculpture, and architecture in 18th century Europe. (Spring—day.)   |                 |                     |
| 109   | <b>Nineteenth Century Art in Europe (3)</b>  | Leite           |                     |
|       | Painting and sculpture from Academism to Symbolism. (Summer—1965.)   |                 |                     |



- 110 **Contemporary Art (3)** Leite  
Painting and sculpture in 20th century Europe. (Spring—day.)
- 111 **Classical Archeology (3)** MacDonald  
Archeological monuments of classical civilizations, with intensive study of one or more areas selected from architecture, sculpture, painting, or minor arts. (Fall—day.)
- 112 **Art of Egypt and the Ancient Orient (3)** MacDonald  
A study of the art of Mesopotamia, Anatolia, Egypt, and Persia. (Fall—day.)
- 113 **Baroque Art in Italy (3)** Leite  
The development of painting, sculpture, and architecture in the 16th and 17th centuries in Italy. (Fall—day.)
- 114 **Baroque Art in the North (3)** Evans  
The development in painting, sculpture, and architecture in the 16th and 17th centuries in Holland, Flanders, Spain, France, Germany, and England. (Summer 1965.)
- 115 **Christian Iconography (3)** Leite  
The origins and development of Christian symbols and themes from Early Christian to modern times. (Not offered 1965–66.)
- 116 **Classical Iconography (3)** MacDonald  
The origin and development of myths in classical art. (Summer 1965.)
- 120 **Art of China and Japan (3)** Kline  
The architecture, painting, and sculpture of China, Korea, and Japan. (Fall—day.)
- 141 **Interior Decoration (4)** Kline  
Lecture (2 hours), laboratory (3 hours). The principles of decoration dealing with furniture designs and ensemble layout, draperies, color, accessories, and lighting. Studio fee, \$5. (Summer 1965.)
- 142 **House Planning (3)** Kline  
The contemporary house for family living, including site problems, the case plan, materials of building, and climate conditioning. (Not offered 1965–66.)
- 145 **Folk Arts in America (3)** Kline  
Ceramics, woodcarving, ironwork, decorative painting, weaving, and other crafts; selected references to American folk music. (Not offered 1965–66.)
- 146 **Principles of Museum Work (3)** Madigan  
An introduction to the history and development of museums; a study of the problems of museum administration, connoisseurship, cataloguing, installation, conservation, and educational service. Prerequisite to graduate study in museology. Field trips to galleries and museums will be arranged. (Fall and spring—evening.)

- Third Group* 203 **Primitive Art \* (3)** Kline  
The arts of prehistoric and primitive man in Europe in the pre-Columbian Americas, Oceania, and Africa. (Spring—day.)
- 207 **Modern Architecture (3)** Kline  
The development of modern architecture and building technology in Europe and America from the late 19th century to the present. (Spring—day.)

\* May be taken for undergraduate credit with the approval of the instructor.

- 243 **Seminar: American Art (3)** Kline  
Specific area to be announced in the Schedule of Classes. (Fall—day.)
- 244 **Seminar: 19th Century Art (3)** Leite  
Specific area to be announced in the Schedule of Classes. A reading knowledge of French is desirable. (Not offered 1965-66.)
- 245 **Seminar: 20th Century Art (3)** The Staff  
Specific area to be announced in the Schedule of Classes. (Not offered 1965-66.)
- 246 **Seminar: Classical Art (3)** MacDonald  
Specific area to be announced in the Schedule of Classes. (Fall—evening; summer 1965.)
- 249 **Theory of Design (3)** Teller  
Application of design principles to painting, architecture, sculpture, and minor arts of today. Individual examples will be examined and discussed in order to show the relationship of design principles to the contemporary artist and his work. Open to undergraduate students with the permission of the instructor. (1965-66 and alternate years: fall—day.)
- 261 **Art Theory and Criticism (3)** The Staff  
History of theory and criticism with area of concentration selected from Classical, Medieval, Renaissance, and Modern fields. (Spring—day.)
- 271-72 **Museum Techniques (6-6)** The Staff  
Assignments in intern training in museum work. The work of each semester will be concentrated into a six-week period, Monday through Friday, from 9 a.m. to 5 p.m. Prerequisite: Art 146. (Academic year—as arranged.)
- 289-90 **Thesis (3-3)** The Staff  
(Academic year—as arranged; summer 1965.)

## DRAWING, PAINTING, SCULPTURE, GRAPHICS, DESIGN, AND CERAMICS

- 10 **Art Structure (3)** Teller *First Group*  
Basic studio course for non-art majors. Studies in line, form, color, texture, and their everyday use are pursued for their enrichment value. Material fee, \$10. (Fall and spring—day.)
- 21-22 **Basic Design \* (3-3)** Teller, Gates  
Fundamental studies of the principles and elements of design. *First half:* study of two-dimensional design. *Second half:* three-dimensional studies. Material fee, \$10 a semester. (Academic year—day and evening; summer 1965.)
- 35-36 **Advertising Design I (3-3)** Schmutzhart  
Basic drawing problems related to design. (Academic year—day and evening.)
- 41-42 **Drawing I (3-3)** Isen  
An introductory course in object and figure drawing and mechanical perspective. (Academic year—day and evening; summer 1965—Art 41 (3).)
- 51-52 **Ceramics I (3-3)** Lafean and Staff  
Basic techniques for clay preparation, hand forming, wheel throwing, and the application of slip glazes and vitreous glazes through workshop and

\* Art 21-22 is prerequisite to all other studio courses

illustrated lectures. Material fee \*, \$25 a semester. (Academic year—day and evening.)

**57-58 Introduction to Graphic Techniques (3-3)** Griffith

Exploration of the methods of intaglio, relief, serigraphy, and other composite methods. Studio fee, \$10 a semester. (Academic year—day and evening; summer 1965.)

**65-66 Painting I (3-3)** Chieffo

Basic color composition and fundamental painting techniques. (Academic year—day and evening; summer 1965—Art 65 (3).)

**81-82 Sculpture I (3-3)** Warneke, Turano

Clay and plaster modeling, and casting techniques. Material fee \*, \$10 a semester. (Academic year—day and evening; summer 1965.)

*Second Group †*

**121-22 Design: Structured (6-6)** Gates

A structured course that extends the student's design experience through a series of problems involved with both two- and three-dimensional media. Emphasis is placed on problem solving through experimentation with materials and tools. Material fee, \$10 a semester. (Academic year—as arranged.)

**123-24 Design: Individual Problems (6-6)** The Staff

Emphasis is placed on the individual student and the problems and materials that specifically interest him in any area of design. Prerequisite: Art 121-22. (Academic year—as arranged.)

**125-26 Painting II (6-6)** Twitty

Development of basic concepts carried into personal statement. (Academic year—day and evening; summer 1965—Art 125 (3), Art 126 (3).)

**127-28 Painting III (6-6)** Russo

Exploratory efforts in the development of style using advanced methods and materials. (Academic year—day and evening; summer 1965—Art 127 (3).)

**131-32 Ceramics II (6-6)** Hara

Basic techniques in clay and glaze formation, advanced wheel throwing and hand forming, mosaic. Individual projects in a choice of techniques. Material fee \*, \$30 a semester. (Academic year—day and evening.)

**139-40 Design Workshop (3-3)** Gates

Exploration of design possibilities in wood, metal, textile, plastics, and other materials. Studio fee, \$10 a semester. (Summer 1965.)

**143-44 Serigraphy (3-3)** Teller

Advanced problems in serigraphy with emphasis on its aesthetic possibilities. Studio fee, \$10 a semester. Prerequisite: Art 57-58. (Academic year—day.)

**147 The Development of Graphic Techniques (3)** Griffith

A study of the graphic techniques of print makers from the 15th century to the present. (Fall—day.)

**151-52 Ceramics III (6-6)** Lafean

Advanced glaze calculation, experimentation in reduction firing, individual problems in formation techniques, and problems in series production for the studio artist. Advanced decorating and finishing techniques. Material

\* Material fees for courses in ceramics and sculpture are to be paid at the Corcoran School of Art.

† All second-group courses may be repeated for credit with the approval of the Department.



fee \*, \$30 a semester. (Academic year—day and evening.)

- 153-54 **Etching (3-3)** Griffith  
Prerequisite: Art 57-58. (Academic year—day.)
- 157-58 **Relief Printing (6-6)** Perlmutter  
Relief printing and wood block, with special reference to western and eastern techniques. (Academic year—day.)
- 159-60 **Drawing II (3-3)** Russo  
Special problems in anatomy and drawing and painting of the life model in action. (Academic year—day and evening.)
- 161 **Workshop in Ceramics (3)** Lafean and Staff  
Material fee \*—beginning students, \$25; advanced students, \$35. (Summer 1965.)
- 162 **Welding (3)** Gates  
Special problems in welded sculpture. (Fall—day.)
- 165-66 **Painting, Drawing, and Composition (6-6)** Archer  
Primarily for nonmajors. (Academic year—day and evening.)
- 175-76 **Design Projects (6-6)** The Staff  
Advanced problems in various areas. (Academic year—day and evening; summer 1965—Art 175 (3).)
- 179-80 **Sculpture II (6-6)** Warneke, Turano  
Advanced problems in modeling and direct carving. Material fee \*, \$10 a semester. (Academic year—day and evening; summer 1965—Art 179 (3), Art 180 (3).)
- 183-84 **Advertising Design II (6-6)** Taney and Staff  
Problems in layout, letter form, illustration, photography, and type. (Academic year—day and evening.)
- 185-86 **Advertising Design III (6-6)** Taney and Staff  
Advanced problems with emphasis on page and small space advertisement. (Academic year—day and evening.)
- 189-90 **Sculpture III (6-6)** Warneke  
Advanced problems in sculpture as related to architecture. Material fee \*, \$10 a semester. (Academic year—day and evening; summer 1965—Art 189 (3), Art 190 (3).)
- 251-52 **Ceramics IV (6-6)** Lafean, Hara *Third Group †*  
Material fee \*, \$30 a semester. (Academic year—day and evening.)
- 253 **Ceramics V (6)** Lafean and Staff  
Material fee \*, \$30. (Fall and spring—day and evening.)
- 265-66 **Painting IV (6-6)** The Staff  
(Academic year—day and evening; summer 1965—Art 265 (3), Art 266 (3).)
- 275 **Painting V (6)** The Staff  
(Fall and spring—as arranged; summer 1965—Art 275 (3).)

\* Material fees for courses in ceramics and sculpture are to be paid at the Corcoran School of Art  
† All third-group courses may be repeated for credit with the approval of the Department

- 279-80 **Sculpture IV (6-6)** Warneke, Turano  
Material fee \*, \$10 a semester. (Academic year—as arranged; summer 1965—Art 279 (3).)
- 281 **Sculpture V (6)** Warneke  
Material fee \*, \$10. (Fall and spring—as arranged; summer 1965—Art 281 (3).)
- 299-300 **Thesis (3-3)** The Staff  
(Academic year—as arranged; summer 1965.)

## Biochemistry †

*Professor C. R. Treadwell (Chairman)*

*Professorial Lecturers* W. R. Carroll, Arthur Weissbach, Sidney Udenfriend, C. A. Kuether, W. W. Burr, Jr., R. W. Alberts, R. O. Brady, Jr., C. J. Epstein

*Associate Professors* B. W. Smith, G. V. Vahouny, J. M. Bailey

*Assistant Professor* A. S. Brecher

*Special Lecturers* Herbert Weissbach, Walter Mertz

*Master of Arts or Master of Science in the field of Biochemistry.*—Prerequisite: a Bachelor of Arts or a Bachelor of Science degree. The undergraduate program must have included the following courses, or the equivalent: Biological Sciences 1-2; Chemistry 11-12, 21, 22, 151-52; Physics 1-2.

Required: the general requirements, pages 69-71, including Biochemistry 221-22, 227-28, 249-50, 299-300. The remaining courses are to be selected from Biochemistry 224, 232, 241, 262, 264, 295-96, or, with the approval of the adviser, from graduate courses in Microbiology, Chemistry, Physiology, or Pharmacology. It is usually not possible to arrange courses and research so that the student can be assured of completing all of the required work in one academic year.

*Doctor of Philosophy.*—See pages 75-84.

- 221-22 **General Biochemistry (4-4)** Vahouny  
A lecture and laboratory course for nonmedical students. Prerequisite: Chemistry 152. Material fee, \$20 a semester. (Academic year—TTh 8-12 am.)
- 224 **Biochemistry of the Enzymes (1)** A. Weissbach  
Lecture course dealing with the biochemistry of the enzymes and enzyme reactions. Prerequisite: Biochemistry 221. (1966-67 and alternate years.)
- 225-26 **Biochemical Procedures (3-3)** Smith and Staff  
A laboratory course. Material fee, \$16 a semester. (Academic year—as arranged.)
- 227-28 **Biochemistry Seminar (1-1)** The Staff  
The current literature in the field of biochemistry, mainly for graduate students, but open to a limited number of specially qualified medical students. (Academic year—W 4 pm.)

\* See (\*) footnote on page 171.

† Staff of Instruction for the academic year 1964-65.

- 232 **Proteins and Amino Acids (1)** Carroll  
A lecture course. Prerequisite: Biochemistry 221. (Spring—W 5 pm.)
- 241 **Isotopes (3)** Burr  
Theoretical characterization of isotopes and their applications in biology. Attention will be given to counting, health physics and radiation safety, autoradiography and chromatography. Laboratory fee, \$16. (Spring—S 8 am.)
- 249-50 **Introduction to Medical Research \*** (3-3) Bailey  
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—anatomical, statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, \$7.50 a semester. (Academic year—W 1-5 pm.)
- 252 **Biochemistry of the Brain (1)** Albers, Brady  
An elective course for medical students; open to a limited number of graduate students. Recent biochemical developments in structure, functions, and metabolic processes unique to the brain. (Spring—Th 1 pm.)
- 254 **Human Nutrition (1)** Pollack  
An elective course for medical students; open to a limited number of graduate students. Application of nutritional principles in humans. (Spring—Th 2 pm.)
- 256 **Biochemistry of Organ Function (1)** Kramer  
An elective course for medical students; open to a limited number of graduate students. Emphasis on biochemical processes unique to particular organ systems and the application of these processes to the evaluation of function. (Spring—Th 3 pm.)
- 258 **Inherited Metabolic Diseases (1)** Epstein  
A series of lectures on the contributions of molecular biology to the understanding of human mutations and hereditary diseases. Specific disease states and the genetics of protein structure will be discussed. Prerequisite: Biochemistry 222. (Spring—S 10 am.)
- 262 **Biochemistry of the Lipids (1)** Vahouny  
A lecture course. Prerequisite: Biochemistry 222. (Spring—Th 4 pm.)
- 264 **Carbohydrate Metabolism (1)** A. Weissbach  
A lecture course. Prerequisite: Biochemistry 222. (1965-66 and alternate years: spring—Th 5 pm.)
- 295-96 **Research in Biochemistry (arr.)** The Staff  
(Academic year—as arranged.)
- 299-300 **Thesis (3-3)** The Staff

\* This is an interdepartmental course. The student should register in the department directing his research.



## Biological Sciences\*

*Professors* I. B. Hansen (*Chairman*), Edith Mortensen, S. C. Munson, A. H. Desmond, R. B. Stevens, R. L. Weintraub

*Professorial Lecturers* K. C. Kates, L. B. Smith

*Associate Professors* J. M. Kaper (*Research*), Caroline Adams, Kittie Parker (*Visiting*)

*Associate Professorial Lecturers* J. R. Buchheit, J. G. Palmer, R. S. Sigafos, R. N. Stewart, W. A. Shropshire, Jr., H. M. Cathey

*Assistant Professors* B. J. Leach, S. O. Schiff

*Assistant Professorial Lecturers* M. M. Margulies, F. B. Abeles, A. J. Tousimis

*Instructors (part-time)* Jean Morton, Dorothy Hoelzer, Bernice Radovich

*Bachelor of Arts or Bachelor of Science with a major in Biology (Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, page 57, including Biological Sciences 1–2, or the equivalent, and Chemistry 11–12.

Required: in addition to the general requirements, pages 63–67, a minimum of twenty-four semester hours of second-group courses which should include at least six hours in Biology, six in Botany, and six in Zoology; and the passing of the Biology major examination at the end of the senior year.

*Bachelor of Arts or Bachelor of Science with a major in Botany (Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, page 57, including Biological Sciences 1–2, or the equivalent, and Chemistry 11–12.

Required: in addition to the general requirements, pages 63–67, a minimum of twenty-four semester hours of second-group courses in Botany or in a combination of Botany and related sciences as approved by the Chairman; and the passing of the Botany major examination at the end of the senior year.

*Bachelor of Arts or Bachelor of Sciences with a major in Zoology (Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, page 57, including Biological Sciences 1–2 and Chemistry 11–12.

Required: the general requirements, pages 63–67, and the passing of the Zoology major examination at the end of the senior year.

*Master of Arts or Master of Science in the field of Biology.*—Prerequisite: the equivalent of a Bachelor of Arts or Bachelor of Science degree, respectively, from this University with a major in Biology, Botany, or Zoology.

Required: the general requirements, pages 69–71.

*Master of Arts or Master of Science in the field of Botany.*—Prerequisite: the equivalent of a Bachelor of Arts or Bachelor of Science degree, respectively, from this University with a major in Botany or Biology.

Required: the general requirements, pages 69–71.

*Master of Arts or Master of Science in the field of Zoology.*—Prerequisite: the equivalent of a Bachelor of Arts or Bachelor of Science degree, respectively, from this University with a major in Zoology or Biology.

Required: the general requirements, pages 69–71.

*Doctor of Philosophy (in a field of Biology, Botany, or Zoology).*—See pages 75–84.

*Bachelor of Arts in Education with a teaching field in Biology.*—Prerequisite: the Education curriculum, page 59.

Required: the Biology option and the professional courses listed on page 99.

\* Staff of Instruction for the academic year 1964–65.

## BIOLOGY \*

- 1-2 Introductory Biology \*** (4-4) The Staff *First Group*  
 Lecture (2 hours), laboratory (4 hours). This course is designed to provide the nonscience student with an understanding of the life sciences and to serve as a basis for those who may wish to continue in some aspect of biology. It is the introductory course leading to all second- and third-group courses in biology, botany, and zoology. Material fee, \$10 a semester. (Academic year—day and evening; summer 1965.)
- 108 Organic Evolution** (3) Munson *Second Group\**  
 Theories of organic evolution and present ideas on the principal lines of development in the plant and animal kingdoms; review of the contributions to an understanding of the mechanisms involved in the process. (1965-66: spring—day; 1966-67: spring—evening.)
- 112 Bacteriology** (4) Weintraub  
 Lecture (2 hours), laboratory (3 hours). An introduction to the structure, activities, biological roles, and industrial uses of bacteria and some related organisms. Prerequisite: one year of chemistry. Material fee, \$11. (Spring—day.)
- 115-16 Cytology** (3-3) Schiff  
 Lecture (1 hour), laboratory (4 hours). The morphological and physiochemical properties of plant and animal cells and their components. Preparation of material for study. Prerequisite: one year of chemistry and two years of biological sciences. Material fee, \$11 a semester. (Academic year—day.)
- 119 Introduction to Cell Physiology** (4) Weintraub, Kaper  
 (Formerly Botany 139 or Zoology 139)  
 Lecture (2 hours), laboratory (3 hours). An introduction to the structure and chemistry of the generalized cell of plants, animals, and microorganisms. Prerequisite: Chemistry 11-12 or permission of the instructor. Material fee, \$11. (Fall—day and evening.)
- 120 Cell Physiology** (4) Weintraub, Shropshire  
 (Formerly Botany 140 or Zoology 140)  
 Lecture (2 hours), laboratory (3 hours). A study of cell processes including absorption, excretion, growth, division, contraction, conduction, locomotion, and photosynthesis. Prerequisite: Biological Sciences 119 or permission of the instructor. Material fee, \$11. (Spring—day and evening.)
- 127 Genetics** (3) Stewart  
 An introductory lecture course, dealing with both nuclear and nonnuclear organisms, covering the nature, transmission, and functioning of the genetic material. (Fall—evening; summer 1965.)
- 171-72 Undergraduate Research** (arr.) The Staff  
 Admission by permission of the staff member concerned. (Academic year—as arranged.)
- 201 Seminar: Cytology** (3) (Not offered *Third Group*)  
 A study of the current literature in experimental cytology. (1965-66.)
- 206 Seminar: Radiation Biology** (3) Schiff  
 Actions of different kinds of radiation on living material, with special em-

\* Biological Sciences 1-2 is prerequisite to all second-group courses in Biology, Botany, and Zoology, except by permission of the instructor.

- phasis on effects of radiation on cells and cell parts. (Spring—evening.)
- 207 **Seminar: the Origin of Life** (3) Weintraub  
(1965-66 and alternate years: fall—evening.)
- 295-96 **Research** (arr.) The Staff  
Investigation of special problems. (Academic year—as arranged; summer 1965.)
- 299-300 **Thesis** (3-3) The Staff  
(Academic year—as arranged; summer 1965.)

## BOTANY

- Second Group \** 105 **Field Botany—Seed Plants** (3) Parker  
Lecture (1 hour), laboratory and field (4 hours). A course primarily for nonspecialists, emphasizing local flora. (1965 and alternate summers.)
- 106 **Field Botany—Lower Plants** (3) Adams  
(Formerly Botany 104)  
Lecture (1 hour), laboratory and field (4 hours). A course, primarily for nonspecialists, emphasizing algae, mosses, and ferns. (1966 and alternate summers.)
- 109-10 **Plant Morphology** (3-3) Adams  
Lecture (2 hours), laboratory (2 hours). Material fee, \$8 a semester. (1965-66 and alternate years: academic year—day.)
- 113 **Plant Microtechnique** (3) Adams  
Lecture (1 hour), laboratory (4 hours). An introduction to techniques and problems involved in the preparation of botanical materials for morphological examination. Material fee, \$11. (1966-67 and alternate years.)
- 125-26 **Plant Taxonomy** (3-3) Parker  
Lecture (1 hour), laboratory and field (4 hours). (1965-66 and alternate years: academic year—evening.)
- 131-32 **Mycology** (3-3) Stevens  
Lecture (2 hours), laboratory (2 hours). Material fee, \$8 a semester. (1966-67 and alternate years.)
- 133-34 **Plant Pathology** (3-3) Stevens  
Lecture (2 hours), laboratory (2 hours). Material fee, \$8 a semester. (1965-66 and alternate years: academic year—evening.)
- 135-36 **Plant Physiology** (4-4)  
Lecture (2 hours), laboratory (3 hours). Prerequisite: cell physiology or permission of the instructor. Material fee, \$11 a semester. (1965-66 and alternate years: academic year—evening; 1966-67 and alternate years: academic year—day.)
- 141-42 **Plant Ecology** (3-3) Sigafos  
Lecture (1 hour), laboratory and field (4 hours). (1966-67 and alternate years.)
- 171-72 **Undergraduate Research** (arr.) The Staff  
Admission by permission of the staff member concerned. (Academic year—as arranged.)

\* Biological Sciences 1-2 is prerequisite to all second-group courses in Biology, Botany, and Zoology, except by permission of the instructor.



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|---------|--|---------------|--------------------|
| 221     | <b>Seminar: Plant Taxonomy *</b> (3)<br>(1966-67 and alternate years.)                                 | Parker, Smith | <i>Third Group</i> |
| 232     | <b>Seminar: Mycology and Plant Pathology *</b> (3)<br>(1965-66 and alternate years: spring—evening.)   | Stevens       |                    |
| 235     | <b>Seminar: Plant Physiology *</b> (3)<br>(1966-67 and alternate years.)                               | Cathey        |                    |
| 239     | <b>Seminar: Plant Metabolism *</b> (3)<br>(1965-66 and alternate years: fall—evening.)                 | Correll †     |                    |
| 242     | <b>Seminar: Plant Ecology *</b> (3)<br>(1965-66 and alternate years: spring—evening.)                  | Sigafoos      |                    |
| 252     | <b>Seminar: Plant Virology *</b> (2)<br>(1966-67 and alternate years.)                                 | Kaper         |                    |
| 295-96  | <b>Research</b> (arr.)<br>Investigation of special problems. (Academic year—as arranged; summer 1965.) | The Staff     |                    |
| 299-300 | <b>Thesis</b> (3-3)<br>(Academic year—as arranged; summer 1965.)                                       | The Staff     |                    |

## ZOOLOGY

- |       |   |           |                       |
|-------|---|-----------|-----------------------|
| 101-2 | <b>Invertebrate Zoology</b> (3-3)<br>Lecture (1 hour), laboratory (4 hours). A systematic study of invertebrate forms, including the morphology, physiology, classification, life histories, and phylogenetic relationships. Material fee, \$11 a semester. (1965-66: academic year—day; 1966-67: academic year—evening.)   | Mortensen | <i>Second Group ‡</i> |
| 103-4 | <b>Comparative Vertebrate Anatomy</b> (3-3)<br>Lecture (1 hour), laboratory (4 hours). Lectures on the organ systems of the vertebrates, laboratory dissections of types. Material fee, \$11 a semester. (1965-66: academic year—day; 1966-67: academic year—day and evening; summer 1965.)   | Leach     |                       |
| 145   | <b>Introduction to Vertebrate Embryology</b> (3)<br>Lecture (1 hour), laboratory (4 hours). Origin and early development of the individual, formation of organ systems. Emphasis on the frog, chick, and pig, with reference to the human embryo. Material fee, \$8. (1965-66 and alternate years: fall—evening, spring—day; 1966-67 and alternate years: fall and spring—day.) | Hansen    |                       |
| 148   | <b>Histology</b> (3)<br>Lecture (1 hour), laboratory (4 hours). Introduction to the microscopical anatomy of normal tissues and organs. Material fee, \$8. (1965-66 and alternate years: fall—day, spring—evening; 1966-67 and alternate years: fall and spring—day; summer 1965.)  | Desmond   |                       |
| 152   | <b>Protozoa</b> (3)<br>Lecture (1 hour), laboratory (4 hours). Introduction to the protozoa: classification, life histories, and physiology, with special emphasis on free-living types. Material fee, \$8. (1965-66 and alternate years: spring—evening.)  | Mortensen |                       |

\* This seminar may be repeated once for credit.

† Appointment effective September 1965

‡ Biological Sciences 1-2 is prerequisite to all second-group courses in Biology, Botany, and Zoology, except by permission of the instructor.

- 155 **Parasitology (3)** Kates  
Lecture (1 hour), laboratory (4 hours). An introduction to the study of animal parasitology, with a survey of parasitic types from the protozoa through arthropods. Material fee, \$11. (1965-66 and alternate years: fall-evening.)
- 157 **Comparative Endocrinology (3)** Leach  
A study of the endocrine systems of the vertebrate classes. Differences and similarities between endocrine mechanisms of fish, amphibians, reptiles, birds, and mammals will be included to illustrate broad trends of evolution in endocrine systems. (Fall-day.)
- 161 **Entomology (3)** Munson  
Lecture (1 hour), laboratory (4 hours). A study of the elementary morphology, physiology, and ecology of insects, with an introduction to the taxonomy of the more important groups. Material fee, \$8. (1965-66 and alternate years: fall-day.)
- 162 **Insect Physiology (3)** Munson  
Lectures and laboratory work on the physiology of insects. Admission by permission of the instructor. Material fee, \$8. (1965-66 and alternate years: spring-day.)
- 163 **Introduction to Human Physiology (3)**  
Similar to the former Physiology 115. Lectures on the fundamentals of physiology in its various subdivisions. (Fall-day.)
- 164 **Comparative Physiology (4)**  
Lectures and laboratory upon the principles of physiology with emphasis upon the vertebrates. (Spring-day.)
- 171-72 **Undergraduate Research (arr.)** The Staff  
Admission by permission of the staff member concerned. (Academic year—as arranged.)
- 199-200 **Proseminar (3-3)** The Staff  
Designed to correlate and supplement the work of Zoology majors. (Offered last time: academic year 1965-66—day and evening.)

- Third Group* 204 **Seminar: Invertebrate Zoology (3)** Mortensen  
A study of original publications on hormones of invertebrate animals. (1966-67 and alternate years: spring-evening.)
- 222 **Seminar: Vertebrate Reproduction (3)** Leach  
Lectures and class reports on the endocrinology of reproduction. The primary emphasis will be placed on recent literature and unsolved problems pertaining to this subject. (1965-66 and alternate years: spring-evening.)
- 224 **Seminar: Comparative Endocrinology (3)** Leach  
Lectures and class reports in endocrinology. Emphasis upon recent literature and unsolved problems in the field of comparative vertebrate endocrinology. (1966-67 and alternate years: spring-day.)
- 247 **Morphogenesis (3)** Hansen  
Lectures and class reports on experimental morphology, with emphasis upon early embryonic development. Prerequisite: Biological Sciences 103-4 or the equivalent. (1966-67 and alternate years: fall-evening.)
- 250 **Seminar: Regeneration (3)** Hansen  
Discussions and class reports upon the theories and experimental evidence in both vertebrate and invertebrate animals. (1966-67 and alternate years: spring-evening.)

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|---------|--|-----------|
| 251     | <b>Seminar: Vertebrate Zoology (3)</b>   | Desmond   |
|         | A study of current publications in the field of histophysiology. and alternate years: fall—evening.)   | (1965-66) |
| 271-72  | <b>Biophysical Methods (3-3)</b>   | Tousimis  |
|         | A lecture course on the methods of biophysics including discussion of the application of centrifugation, electrophoresis, radiation electron microscopy, X-ray analysis, and the electron probe to a variety of problems. (Academic year—day.) |           |
| 295-96  | <b>Research (arr.)</b>   | The Staff |
|         | Investigation of special problems. (Academic year—as arranged; summer 1965.)   |           |
| 299-300 | <b>Thesis (3-3)</b>  | The Staff |
|         | (Academic year—as arranged; summer 1965.)  |           |

## Biology

### Botany

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See "Biological Sciences"

## Business Administration

### Business and Public Administration

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See "Government and Business."

## Chemistry\*

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*Professors* B. D. Van Evera, S. N. Wrenn, C. R. Naeser (*Chairman*), R. C. Vincent, W. F. Sager, R. E. Wood, T. P. Perros, W. E. Schmidt, D. G. White

*Associate Professorial Lecturer* Abraham Schwebel

*Assistant Professors* Margaret Ethier, D. H. Eargle, Jr., Nicolae Filipescu, Bette Barton

**Registration.**—Before completing registration each student must obtain from the representative of the Department an assignment to lecture, recitation, and laboratory sections. The work of the junior and senior years must be approved by the Department.

**Bachelor of Arts or Bachelor of Science with a major in Chemistry (Departmental).**—The Department offers two undergraduate majors designed to give students broad training in the basic divisions of chemistry: analytical, inorganic, organic, and physical chemistry. *Major I*, although providing for considerable concentration in chemistry, permits a wider selection of electives, and thus should meet the needs of students preparing to enter medi-

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\* Staff of Instruction for the academic year 1964-65



cine, dentistry, or related fields. *Major II*, is intended primarily for students preparing to study chemistry in graduate school or those planning to enter the chemical profession and wishing to be certified to the American Chemical Society as having met the minimum requirements for professional training. Both majors require the passing of the major examination at the end of the senior year. The correlated knowledge upon which the student will be examined includes the four divisions of chemistry named above. Two foreign languages are recommended for students planning to do graduate work in chemistry.

Prerequisite: the Arts and Letters or the Science curriculum, respectively, page 57, including Chemistry 11–12 or 15 and 22, Mathematics 22 and 23, Physics 1–2, 51–52.

**Major I:** Required: the general requirements, pages 63–67, including Chemistry 111, 112, 113, 116, 122, 134 (or 235–36), 151–52, 135 or 155 (two semester hours), and 193.

**Major II:** Required: the general requirements, pages 63–67, including the German language, all requirements in *Major I*, plus Chemistry 153 or 155 and one course selected from the following: Chemistry 203, 213, 221, 222, 235, or 251; or Mathematics 139 or 124; or Physics 163 (optics), 167, 168 or 173. The student is encouraged to take Mathematics 24 and Physics 31–32 in preparation for advanced courses and graduate work. These courses are essential to graduate work in theoretical chemistry.

**Master of Arts or Master of Science in the field of Chemistry.**—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Chemistry from this University, or the equivalent.

Required: the general requirements, pages 69–71. All prospective Master's candidates must take qualifying examinations in the fields of analytical, inorganic, organic, and physical chemistry. These examinations will be given during the first week of classes each semester, and are a part of the prerequisites for all advanced courses. At least two of these examinations must be taken at the beginning of the first year of registration and the remaining one(s) must be taken at the beginning of the second year. Deficiencies, if any, shall be eliminated by assignment to appropriate courses in the 100 group for which a limited amount of graduate credit may, upon petition, be assigned for courses normally taken by seniors. The thirty hours of required work must include Chemistry 213 and at least one three semester hour course in the 200 group in two of the three fields of analytical, inorganic, and organic chemistry. In addition, the thirty hours must include at least four semester hours of laboratory work, Chemistry 193 and 299–300. Chemistry 156 is prerequisite to thesis work in the field of organic chemistry. A reading knowledge examination in French or German (German preferred) must be passed before the second half of the work is started.

**Master of Science in the field of Geochemistry (an interdepartmental degree offered by the departments of Chemistry and Geology).**—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Chemistry or in Geology from this University, or the equivalent. Before admission to Master's candidacy, the student with an undergraduate major in Geology must demonstrate by credit or examination a knowledge of the content of Chemistry 111, 112; Mathematics 22, 23; Physics 1–2, 51–52.

Required: the general requirements, pages 69–71, including Chemistry 213; Geology 141, 241, 249–50. All prospective Master's candidates must take qualifying examinations in the fields of analytical and physical chemistry, marine geology, and sedimentation before the second half of the program is started. The Master's Examination (page 71) must be taken before registration for the second half of the thesis work. With permission of the interdepartmental committee on geochemistry the German language may be replaced by Russian.

**Doctor of Philosophy.**—See pages 75–84.

**Bachelor of Arts in Education with a teaching field in Chemistry.**—Prerequisite: the Education curriculum, page 59.

Required: the Chemistry option and professional courses listed on page 99.

**3-4 Fundamentals of Physical Science (4-4)**Schmidt, Ethier *First Group*

A year course: credit is not given for the first half until the second half is completed. Lecture (3 hours), laboratory (3 hours). Selected topics from chemistry, physics, astronomy, and geology are integrated to introduce the nonscience major to the basic methods and achievements of physical science. Laboratory fee, \$11 a semester. (Academic year—day.)

**1-12 General Chemistry (4-4)**

The Staff

A year course: credit is not given for the first half until the second half is completed. Lecture (3 hours), laboratory (3 hours), recitation (1 hour). Elementary course in general chemistry. Prerequisite: one year of high school algebra. Laboratory fee, \$18 a semester. (*First half:* fall—day and evening; summer 1965. *Second half:* spring—day evening; summer 1965.)

**3-14 General Chemistry (4-4)**

White

A year course: credit is not given for the first half until the second half is completed. Lecture (3 hours), laboratory (3 hours), recitation (1 hour). A terminal course in general chemistry for students in the School of Engineering and Applied Science. Prerequisite: Physics 1-2; Mathematics 21 or 27. Laboratory fee, \$18 a semester. (Academic year—day and evening.)

**15 General Chemistry (Accelerated) (4)**

Naeser

Lecture (3 hours), laboratory (3 hours), recitation (1 hour). An intensive one semester course in general chemistry. Prerequisite: high school chemistry accompanied by laboratory work and a satisfactory grade on either the College Entrance Examination Board Achievement Test in Chemistry or on the placement examination given by the Department of Chemistry prior to registration, and high school physics. Laboratory fee, \$13. (Fall—day.)

**21 Qualitative Inorganic Analysis (4)**

Vincent

Lecture (2 hours), laboratory (6 hours). Theoretical and practical study of methods of separating and identifying the more common cations and anions using semi-micro techniques. Prerequisite: Chemistry 12 or 15, or a placement examination which may be waived at the discretion of the instructor. Laboratory fee, \$18. (Fall—day and evening; spring—day; summer 1965.)

**22 Elementary Quantitative Analysis (4)**

Schmidt

Lecture (2 hours), laboratory (6 hours). Theory and practice of quantitative analysis by classical volumetric and gravimetric methods and introduction to instrumental analysis. Prerequisite: Chemistry 12, 14, or 15. Laboratory fee, \$18. (Fall—day; spring—day and evening; summer 1965.)

**111 Physical Chemistry (3)**Wood *Second Group*

Gas Laws, chemical thermodynamics, solution chemistry, chemical equilibria, and other topics are introduced. Prerequisite: Chemistry 22; Mathematics 22; Physics 1-2 or former 13, 14, or 15. (Fall—day and evening; summer 1965.)

**112 Physical Chemistry (3)**

Wood

Chemical kinetics, chemical statistics, electrochemistry, and other topics are introduced. Prerequisite: Chemistry 111. (Spring—day and evening; summer 1965.)

**113 Physical Chemistry Laboratory (2)**

The Staff

The laboratory complement of Chemistry 111; previous satisfactory completion of or concurrent registration for Chemistry 111 is required. Laboratory fee, \$18. (Fall—day and evening; summer 1965.)



- 116 Physicochemical Measurements (3)** The Staff  
The integrated laboratory work associated with Chemistry 112 and 122; principles and applications of physicochemical methods and instruments to problems in chemical thermodynamics and kinetics and in structural and analytical chemistry. Prerequisite: Chemistry 111, 113. Prerequisite or concurrent registration: Chemistry 112, 122. Laboratory fee, \$18. (Spring—day and evening.)
- 122 Instrumental Analysis Lectures (2)** Schmidt  
Theory of instrumental methods in qualitative and quantitative analysis, determination of structure, and study of reaction mechanisms with emphasis on electroanalysis, spectrophotometry, and chromatography. Correlated with laboratory course: Chemistry 116. Prerequisite: Chemistry 22, 111, 113. Concurrent registration: Chemistry 112, 116. (Spring—day and evening.)
- 134 Descriptive Inorganic Chemistry (3)** Naeser  
An intermediate level course emphasizing the descriptive chemistry of the elements. Prerequisite: Chemistry 22, 151, 111. (Spring—day.)
- 135-36 Inorganic Chemistry: Preparations (2-2)** Perros  
Application of the technique of inorganic chemistry to the preparation and purification of a list of selected substances. Prerequisite: Chemistry 152. Prerequisite or concurrent registration: Chemistry 134. Laboratory fee, \$18 a semester. (First half: fall—evening; spring—day. Second half: fall—evening.)
- 151-52 Organic Chemistry (4-5)** Wrenn, Barton  
A year course: credit is not given for the first half until the second half is completed. Chemistry of the compounds of carbon. Prerequisite: Chemistry 12 or 14 or 15 and high school physics or Physics 1. Laboratory fee: Chemistry 151, \$12; Chemistry 152, \$20. (First half: fall—lecture (3 hours), laboratory (3 hours), day and evening; summer 1965. Second half: spring—lecture (3 hours), laboratory (6 hours), day and evening; summer 1965.)
- 153 Special Laboratory in Organic Chemistry (1)** Wrenn, Barton  
A course designed to give the chemistry major additional and broader training in the technique of organic chemistry than is obtained in Chemistry 151-52. Prerequisite or concurrent registration: Chemistry 22, 152. Laboratory fee, \$12. (Chemistry 155 may be substituted for this course.) (Spring—day and evening.)
- 155 Organic Chemistry: Preparations (2 or 3)** Wrenn  
Synthesis of organic compounds and application of the technique of organic chemistry to the preparation of pure compounds, using larger amounts and greater refinements than in Chemistry 151-52. Prerequisite: Chemistry 22, 152. Laboratory fee, \$10.50 a semester hour. (Spring—evening.)
- 156 Qualitative Organic Analysis (3)** Wrenn  
Lecture (1 hour), laboratory (6 hours). Identification of pure organic compounds, separation of mixtures, and identification of their components. Required of all students planning thesis work in organic chemistry. Prerequisite: Chemistry 22, 152. Laboratory fee, \$18. (Fall—evening.)
- 191 History of Chemistry (2)** Perros  
Historical development of chemistry. Prerequisite: Chemistry 22, 152. (1965-66 and alternate years: fall—evening.)
- 193 Chemical Literature (1)** Wrenn  
A general course in chemical literature with reference work and reports. Prerequisite: Chemistry 22, 152. Prerequisite or concurrent registration: Chemistry 111, 112. (Fall—evening.)



- 203 **Chemical Kinetics (2)** Wood *Third Group*  
The rates of chemical reactions and the factors influencing them. Prerequisite: Chemistry 112. (1965-66 and alternate years: spring-evening.)
- 211-12 **Physical Chemistry (2-1)** Wood  
Same as Chemistry 111 and 112. Admission only by departmental permission. Credit will be assigned only upon the satisfactory completion of Chemistry 213. (Academic year—day and evening.)
- 213 **Chemical Thermodynamics (3)** Wood  
Application of thermodynamics to chemical problems. Thermochemistry, homogeneous and heterogeneous equilibria, statistical calculation of thermodynamic properties, electrochemistry. Prerequisite: (1) grade *A* or *B* in Chemistry 111 and 112, or (2) *B* (satisfactory) in Chemistry 211-12, or (3) qualifying grade in physical chemistry qualifying examination. (Fall—evening.)
- 216 **Statistical Mechanics as Applied to Chemistry (3)** Barton  
An introduction to classical and quantum statistics designed to acquaint the student with the basic principles and application of the method. Prerequisite or concurrent registration: Chemistry 213 or permission of instructor. (1966-67 and alternate years.)
- 217 **Chemical Bonding (2)** Barton  
A survey of modern developments in the theory of valence with emphasis on application to problems of stability and structure of complex molecules. Prerequisite: Chemistry 213 or permission of instructor. (1966-67 and alternate years.)
- 219-20 **Spectrochemistry I-II (3-3)** Filipescu  
A study of the energetic states of molecules under the influence of electromagnetic radiation leading to photochemical reactions or to spectroscopic phenomena. Prerequisite to Chemistry 219: Chemistry 112 and 221. Prerequisite to Chemistry 220: Chemistry 112 and 152. (1966-67 and alternate years.)
- 221-22 **Advanced Analytical Chemistry \*** (2 or 3-2 or 3) Eargle, Schmidt  
Lecture (2 hours), laboratory (3 hours—optional). *First half:* theory and application of recent spectrometric methods of analysis including electrical magnetic, and optical instrumentation. *Second half:* theory and application of electroanalysis, radioanalysis, and separations by physiochemical methods. Prerequisite: Chemistry 22, 122, and qualifying examination. The lectures may be taken for 2 credits a semester without laboratory work, either half may be taken first. Laboratory fee, \$11 a semester. (*First half:* fall—evening. *Second half:* not offered 1965-66.)
- 231-32 **Special Topics in Inorganic Chemistry (2-2)** White, Perros  
A series of one-semester courses covering such topics as (1) chemistry of the less familiar elements, (2) organometallic, organosilicon, and carbonyl compounds, and (3) co-ordination chemistry. Prerequisite: Chemistry 134 or 235. (Academic year—evening.)
- 234 **Radiochemistry (2)** Schwebel  
The preparation, properties, and uses of radioactive isotopes, both natural and artificial. Prerequisite: Chemistry 235-36. (1966-67 and alternate years.)
- 235-36 **Advanced Inorganic Chemistry \*** (3-2) White  
Application of modern chemical theories to inorganic substances and reactions, followed by a detailed study, developed from the periodic table, of the chemistry of the more common elements. Prerequisite: Chemistry 112 and 151 and qualifying examination. (Academic year—evening.)

\* The appropriate qualifying examination is prerequisite to all "advanced" courses.

- 251-52 **Advanced Organic Chemistry** \* (3-3) Filipescu  
 Synthesis, reactions, and properties of carbon compounds; fundamental theories of organic chemistry. Prerequisite: Chemistry 152 and qualifying examination. Prerequisite or concurrent registration: Chemistry 111, 112. (Academic year—evening.)
- 253 **Advanced Synthetic Organic Chemistry** \* (3) Wrenn  
 Study of reactions employed in the synthesis of organic compounds. Prerequisite: Chemistry 251. (Spring—evening.)
- 257 **Theoretical Organic Chemistry** (3)  
 Survey of modern theories of organic chemistry with emphasis on reaction mechanisms. Prerequisite: Chemistry 252. (1965-66 and alternate years: spring—evening.)
- 259-60 **Polymer Chemistry** (3) Filipescu  
 A study of the preparation, properties, and structure of macromolecules. Prerequisite: Chemistry 112 and 152. (1965-66 and alternate years: academic year—evening.)
- 291-92 **Seminar: Recent Developments in Chemistry** (1-1) The Staff  
 (Academic year—day.)
- 295-96 **Research** (arr.) The Staff  
 Research on problems approved by the Staff. Open to qualified students with advanced training. Laboratory fee, \$7.50 a semester hour. (Academic year—as arranged; summer 1965.)
- 299-300 **Thesis** (3-3) The Staff  
 Laboratory fee, \$18 a semester. (Academic year—as arranged; summer 1965.)

## Chinese

See "Slavic and Oriental Languages and Literatures."

## Classical Languages and Literatures†

*Professor J. F. Latimer (Chairman)*

*Associate Professorial Lecturer Sylvia Gerber*

*Assistant Professorial Lecturers A. B. Seidman, Mary Norton, Dorothea Wender*

*Instructor (part-time) D. B. Beers*

*Bachelor of Arts with a major in Latin (Departmental).*—Prerequisite: the Arts and Letters curriculum, page 57, including Latin 51-52 and History 39-40.

Required: in addition to the general requirements, pages 63-67, eighteen semester hours in Latin beyond first-group courses, Art 111, Philosophy 111. A reading knowledge of French or German, preferably both, is strongly recommended.

*Bachelor of Arts with a major in Classical Archeology and Greek (Departmental).*—This interdepartmental major may be arranged in conjunction with the Department of Art. Prerequisite: the Arts and Letters curriculum, page 57, Greek 13-14, and History 39-40.

\* The appropriate qualifying examination is prerequisite to all "advanced" courses  
 † Staff of Instruction for the academic year 1964-65

Required: in addition to the requirements, pages 63-67, Greek 107, 108; Anthropology 183; Art 101, 102, 111, 116; Philosophy 111. History 109 is strongly recommended as an elective. A reading knowledge of French or German, preferably both, is strongly recommended.

Latin 1-2 and 3-4, or Greek 11-12 and 13-14 satisfy the foreign language requirement, see page 56.

## LATIN AND GREEK

- 1-2 First-year Latin (3-3)** The Staff *First Group*  
 A year course: credit is not given for the first half until the second half is completed. Functional presentation of the essentials of the language, with appropriate reading selections; development of English derivatives; introduction to Roman life and literature. (Academic year—day; summer 1965.)
- 3-4 Second-year Latin (3-3)** Norton  
 A year course: credit is not given for the first half until the second half is completed. A continuation of the first-year course, but with increased emphasis on Latin readings which illustrate Roman life and literature; continuation of vocabulary building in English. Prerequisite: Latin 1-2 or two years of high school Latin. (Academic year—day.)
- 11-12 First-year Greek (3-3)** Beers  
 A year course: credit is not given for the first half until the second half is completed. Essentials of grammar with appropriate reading selections. (1966-67 and alternate years.)
- 13-14 Second-year Greek (3-3)** Latimer  
 A year course: credit is not given for the first half until the second half is completed. Review of grammar; rapid reading from selected Greek authors. Prerequisite: Greek 11-12. (1965-66 and alternate years: academic year—day.)
- 101-2 Introduction to Latin Prose and Poetry (3-3)** Norton *Second Group*  
 Selections from various Latin authors: Nepos, Caesar, Cicero, Sallust, Livy, Catullus, Virgil, Horace, etc., to cover the broad sweep of Roman literature. Prerequisite: Latin 3-4 or the equivalent. (Academic year—day.)
- 103-4 Roman Comedy (3-3)** The Staff  
 Selected plays from Plautus and Terence. Prerequisite: Latin 101-2 or permission of the instructor. (1966-67 and alternate years.)
- 105 Latin Correspondence and Composition (3)** Norton  
 Selections from the letters of Cicero and Pliny for rapid reading. Latin prose composition based on the reading selections. Prerequisite: Latin 101-2 or permission of the instructor. (Summer 1965.)
- 107 Homer (3)**  
 Selections from the Illiad and Odyssey for rapid reading. Prerequisite: Greek 3-4 or the equivalent. (1966-67 and alternate years.)
- 108 Greek Historians (3)**  
 Selections from Herodotus and Thucydides for rapid reading. Prerequisite: Greek 3-4 or the equivalent. (1966-67 and alternate years.)
- 111-12 Roman History and Philosophy (3-3)** Latimer  
 Selections from Cicero, Sallust, Lucretius, and Livy. Prerequisite: Latin 101-2 or permission of the instructor. (1966-67 and alternate years.)



- 121-22 **Roman Lyric Poetry and Satire (3-3)** Latimer  
 Selections from Catullus, Horace, Juvenal, and Martial. Prerequisite: Latin 101-2 or permission of the instructor. (Academic year—day.)

### COURSES IN ENGLISH TRANSLATION

- First Group* 71-72 **Greek and Roman Backgrounds in Literature (3-3)** Latimer  
 Selected Greek and Roman masterpieces and their literary influence. This course satisfies the literature requirement, see (\*) footnote, page 207. *First half*: Greek and Roman epic. *Second half*: selections from Plato and Cicero. (*First half*: spring—day. *Second half*: fall—day.)
- Second Group* 109 **Greek and Roman Drama (3)** Wender  
 Selected tragedies of Aeschylus, Sophocles, Euripides, and Seneca; selected comedies of Aristophanes and Menander, Plautus and Terence; historical development of classical drama. (Fall—day; summer 1965.)
- 114 **Latin and Greek Satirical Writings (3)** Wender  
 Selections from Horace, Juvenal, Martial, and Lucian. (Spring—day.)

### CLASSICAL HEBREW

- First Group* 21-22 **First-year Classical Hebrew (3-3)** Seidman  
 A year course: credit is not given for the first half until the second half is completed. Fundamental principles of the language with practice in reading simple narrative prose. (Academic year—day.)
- 23-24 **Second-year Classical Hebrew (3-3)** Seidman  
 A year course: credit is not given for the first half until the second half is completed. Review of grammar and exegesis of selected passages from the Hebrew text of the Old Testament. (Academic year—day.)

### RELATED COURSES IN OTHER DEPARTMENTS

- Art 101 *Greek and Roman Architecture* (3)  
 Art 102 *Greek and Roman Sculpture* (3)  
 Art 111 *Classical Archeology* (3)  
 Education 141 *Teaching Latin* (3)  
 Philosophy 111 *History of Philosophy* (3)

### Economics\*

- Professors* A. E. Burns, D. S. Watson, T. W. Holland, J. W. Kendrick, W. E. Schmidt, J. W. Skinner (*Chairman*), C. T. Stewart, Jr. (*Research*), C. E. Galbreath, Joseph Aschheim  
*Professorial Lecturer* R. E. Moor  
*Associate Professors* R. P. Sharkey, Mary Holman (*Research*), Murray Brown  
*Associate Professorial Lecturers* R. L. Sammons, D. L. Edwards, Henry Solomon, M. A. Gomez

\* Staff of Instruction for the academic year 1964-65.

Assistant Professors Ching-Yao Hsieh, S. J. Hunter, William Long,  
Vito Tanzi

Assistant Professorial Lecturers Paul Gekker, S. E. Haber

*Bachelor of Arts with a major in Economics (Departmental).*—Prerequisite: the Arts and Letters curriculum, page 57, including Economics 1-2 and Statistics 51.

Required: the general requirements, pages 63-67, and (1) Economics 101-2 and 121 and fifteen additional hours in second-group courses to be selected with the approval of the adviser; (2) Economics 198 which may be taken upon the completion of Economics 101-2 and 121; (3) Statistics 111, 112; (4) nine semester hours of other second-group courses selected with the approval of the adviser.

*Bachelor of Arts with a major in Latin American Civilization (Field-of-Study).*—See the Department of History.

*Master of Arts in the field of Economics.*—Prerequisite: the degree of Bachelor of Arts with a major in Economics at this University, or the equivalent.

Required: the general requirements, pages 69-71, including Economics 210, at least nine semester hours in economic theory, and a thesis (Economics 299-300).

*Doctor of Philosophy.*—See pages 75-84.

*Master of Arts in Government with a major in Economic Policy.*—Prerequisite: an undergraduate major in Economics at this University, or the equivalent. See pages 125-26, 131-32, 134.

**1-2 Principles of Economics \* (3-3) Skinner and Staff First Group**

Lecture (2 hours), recitation (1 hour). Survey of the major economic principles, institutions, and problems in contemporary life. Economics 1 is prerequisite to Economics 2. (First half: fall and spring—day and evening; summer 1965. Second half: fall—evening; spring—day and evening; summer 1965.)

**101-2 Economic Analysis (3-3) The Staff Second Group**

Analysis of demand, supply, and pricing; theory of national income determination. (First half: fall—day and evening; spring—evening; summer 1965. Second half: fall—day; spring—day and evening; summer 1965.)

**104 History of Economic Thought (3) Hsieh**

History of the major schools of economic thought; influence of changing problems on the development of economic theory. (Spring—day)

**105 Business Cycles (3)**

Description and analysis of the facts of economic instability; survey of recent business cycle theory, forecasting, and consideration of counter-cyclical policies. (Fall—evening.)

**121 Money and Banking (3) Hunter**

Theory of money, credit, and banking; commercial banking and the Federal Reserve System; other financial institutions; international aspects of money; current financial problems. (Fall—day and evening; spring—evening; summer 1965.)

**123 Monetary Theory and Policy (3) Hunter**

Principal contemporary theories, background of recent monetary policy. (Spring—day.)

**133 The Economy of the Soviet Union (3) Gekker**

Development and main features of the economic life of the Soviet Union. (See History 145-46 and Geography 166.) May be taken for graduate credit with the approval of the instructor. (Fall—evening.)

\* Economics 1-2 is prerequisite to all other courses in Economics.

**141 Unionism and Collective Bargaining (3)** Holland  
The development and characteristics of American unionism and collective bargaining as economic and social institutions, appraisal of economic and social aspects, public policies and controls. (Fall—day.)

**142 Labor Economics (3)** Holland  
Characteristics of the American labor force, operations of labor markets, wage theories and practices, impact of collective bargaining, causes and characteristics of unemployment, public policies and programs. (Spring—day.)

**147 Economic History of Europe \* (3)** Sharkey  
European economic development since the Middle Ages with particular emphasis on the period following the Industrial Revolution. The evolution of capitalism and its varying impact upon the societies of Europe will be treated. (Fall—evening.)

**161-62 Public Finance and Taxation (3-3)** Tanzi  
General survey of government expenditures; sources and methods of taxation; economic effects of expenditures, taxes, and of government debt policies. (Academic year—evening.)

**165 Government Control of Economic Activity (3)** Long  
Changing role of government in promoting and regulating economic activity, types and spheres of control. (Fall—day.)

**179-80 Economic History of the United States \* (3-3)** Sharkey  
(Replaces former History 174)  
An analysis of the process of economic growth in the United States from Colonial times to the present. The development of various sectors in the economy such as agriculture, transportation, manufacturing, and banking will be treated and their interdependence stressed. *First half:* 1607 to 1865. *Second half:* 1865 to the present. (Academic year—evening.)

**181-82 International Economics (3-3)** Aschheim, Schmidt  
*First half:* survey of the theory of international trade, factor movements, and balance-of-payments adjustment. *Second half:* analysis of modern international economic problems including problems of less developed countries. (Academic year—day and evening.)

**185-86 Economic History and Problems of Latin America (3-3)** Gomez  
Evolution of the economies of Latin America with particular emphasis on present structures and problems, considered in the regional, country, and sub-region contexts. Economics 185, special attention to Middle America; Economics 186, special attention to South America. (Academic year—evening.)

**198 Proseminar in Economics (3)** Skinner  
Comprehensive survey of economics. Prerequisite: Economics 101-2 and 121. (Fall and spring—as arranged.)

*Third Group* **201-2 History and Literature of Economic Thought (3-3)** Burns  
Critical analysis and interpretation of the development and the literature of economic thought, origins, and problems, of the major types of theory, and their relation to present problems and policies. (Academic year—evening.)

**203-4 Contemporary Price Theory (3-3)** Watson  
The theory of relative prices from Marshall to the present. (Academic year—evening.)

\* An interdepartmental course offered by the departments of Economics and History. Students may register in either department.

**188 ECONOMICS**



- 205 **Theory of Employment and Income (3)** Hsieh  
Determinants of the level of employment and income. Keynesian and classical systems contrasted, and recent literature on the subject. (Fall—evening.)
- 206 **Business Cycle Analysis (3)** Kendrick  
Empirical analysis of American business cycles; evaluation of the methodology and findings of the National Bureau of Economic Research. Statistical tests of theories of the business cycle. (Spring—evening.)
- 208 **The National Income (3)** Kendrick  
The theory of economic aggregates; measurement and policy aspects of national income. (Spring—evening.)
- 210 **Seminar in Economics (3)** Skinner  
Methodology of economics, integration of economic theories, methods of research. Open only to students who have completed fifteen hours of graduate work in economics. (Academic year—evening.)
- 212 **Seminar: Price Theory (3)** Watson  
Advanced topics in the theory of relative prices. Prerequisite: Economics 203-4 or the equivalent. (Fall—evening.)
- 213 **Economic Thought in the 20th Century (3)** Burns  
Continuation of Economics 201-2. The principal trends in economic thought during the present century. (Not offered 1965-66.)
- 215-16 **Mathematical Economics (3-3)** Solomon  
Introduction to the uses of mathematics in economic theory. (Academic year—evening.)
- 217-18 **Survey of Economics (3-3)** Watson  
Survey of economic analysis and policy. Not open to graduate students in economics or economic policy. (Academic year—evening.)
- 221-22 **Monetary Theory (3-3)** Hunter  
Contemporary monetary theories. (Academic year—evening.)
- 223-24 **Monetary Policy and Central Banking (3-3)** Aschheim  
The money system in its relation to national income: monetary policies of the Federal Reserve and other central banking systems. (Academic year—evening.)
- 231-32 **Quantitative Economics (3-3)** Solomon  
Selected topics in quantitative economics. (Not offered 1965-66.)
- 241 **Unionism, Collective Bargaining, and Labor Economics (3)** Holland  
An accelerated introductory course in labor economics primarily for graduate students in Personnel Administration. (Fall—evening.)
- 244 **Problems in Unionism, Collective Bargaining, and Labor Economics (3)** Holland  
Concentrated study of selected economic, social, and legal aspects of labor relations and labor economics. (Spring—evening.)
- 246 **Foreign Labor Movements (3)** Holland  
Labor in the economic, social, and political structures of selected foreign countries. Contrasts and comparisons with the United States. (Spring—evening.)
- 247 **Labor Relations in the Federal Service (3)** Holland  
Admission by permission of the instructor. (Fall and spring—evening.)

- 251-52 **Economic Development (3-3)** Schmidt, Galbreath  
The theories and problems of economic growth with special attention to the underdeveloped countries. (Academic year—evening.)
- 253 **Productivity Analysis (3)** Kendrick  
Concepts and measures of productivity; relations to economic growth and to structural changes in the American economy. (Fall—evening.)
- 261-62 **Public Finance and Fiscal Policy (3-3)** Moor  
Special problems in contemporary public finance and fiscal policy. (Academic year—evening.)
- 263-64 **Theory of Public Finance (3-3)** The Staff  
Criteria for the allocation of government expenditures, principles of taxation, fiscal policy for stable growth. (Academic year—evening.)
- 265-66 **Theory of Economic Policy (3-3)** Stewart  
The nature, forms, methods, and objectives of economic policy; the relation of economic theory to economic policy. (Academic year—evening.)
- 267 **The Soviet Economy (3)** Gekker  
Development of the Soviet-type economy; organization, policies, and problems; monetary, fiscal, production, allocative, foreign trade, economic growth. (See also History 145-46, 345-46, and Geography 166.) (Spring—evening.)
- 275 **Econometrics I: Introduction to Econometric Studies \* (3)** Brown  
Survey of econometrics. (Fall—evening.)
- 276 **Econometrics II: Econometric Methods \* (3)** Brown  
Development of the methods of econometrics. Prerequisite: differential and integral calculus, matrix theory, Economics 275. (Spring—evening.)
- 277 **Econometrics III: Advanced Topics in Econometrics \* (3)** Brown  
The analysis of econometric techniques. Prerequisite: Economics 275 and mathematical economics. (Spring—evening.)
- 278 **Econometrics IV: Seminar in Econometrics \* (3)** Brown  
A research seminar. Prerequisite: Economics 275, 276, 277. (Fall—evening.)
- 281-82 **International Economics (3-3)** Schmidt  
*First half:* the theory of international trade and factor movements. *Second half:* the theory of balance-of-payments adjustment. (Academic year—evening.)
- 284 **United States Foreign Economic Policy (3)** Schmidt  
Analysis of foreign aid program; international, commercial, and monetary policy of the United States; United States and international economic organization. (Fall—evening.)
- 285-86 **Economic Development of Latin America (3-3)** Gomez  
Current policies and programs, capital formation, public and private; foreign loans and investment; social and technological preconditions of investment. (Academic year—evening.)
- 290 **Seminar: International Economics (3)** Schmidt  
Advanced topics in international economics. Prerequisite: Economics 281-82 or the equivalent. (1965-66 and alternate years: spring—evening.)
- 299-300 **Thesis (3-3)** The Staff  
(Academic year—as arranged; summer 1965.)

\* An interdepartmental course offered by the departments of Economics and Statistics. Students may register in either department.

379-80 **Reading Course in Economic History** † (3-3)  
(Academic year—evening.)

Sharkey *Fourth  
Group* \*

#### **COURSES OFFERED IN SPECIAL PROGRAMS**

In addition to the regular courses announced above, the University offers the following economics courses for students enrolled in Navy Graduate Financial Management Program and Air Force Advanced Management Program.

191 *Foreign Economic Policies and Problems* (3)

195 *Governmental and Industrial Economics* (3) (Summer 1965)

#### **Education ‡**

*Professors* B. S. Root (*Chairman*), G. L. Angel, W. T. Carroll, F. N. Hamblin, W. A. McCauley, Carol St. Cyr, Perry Botwin, J. T. Dailey (*Research*)

*Professorial Lecturers* Madaline Remmlein, H. O. Johnson, Anthony Marinaccio, J. B. Holden, J. P. Walsh, D. D. Darland, J. C. Lang, J. F. Rogers, H. M. Wilson, Roy Edelfelt, H. H. Kempfer, F. E. Wellmann, Ruth Newman, M. H. Fouracre, Bertice Cornish, Jean Ervin

*Associate Professors* Mary Coleman, H. G. Detwiler, R. E. Baker, Martha Rashid, R. W. Eller, J. W. Suber, S. R. Westerlund

*Associate Professorial Lecturers* LuVerne Walker, Eugenia Nowlin, Beverly Crump, Helen Mitchell, C. O. McDaniels, W. E. Amos, Marcella Bernstein, N. J. Long, Irene Hypps, Christine Kehne, Katherine Scrivener

*Assistant Professors* J. G. Boswell, Margaret McIntyre, R. L. Williams, Joanne Parker, Gloria Horrworth, C. A. Neyman (*Research*)

*Assistant Professorial Lecturers* R. J. Kubalak, Clarke Trundle, Shirley McCune, David Iwamoto, F. W. Kovacs, Amelia Carew, J. D. Gates, Helen Jacoby

*Instructor* Margaret Moss

*Director* M. H. Jessup, *Assistant Director* J. F. Lobutz

*Field Studies*

Mary Maré, *Assistant Principal, Dean of Girls, Wakefield High School, Arlington, Va.*; C. M. Richmond, *Principal, Stratford Junior High School, Arlington, Va.* *Field Service Coordinators*

\* Fourth-group courses are limited to graduate students; but they are primarily for doctoral candidates

† An interdepartmental course offered by the departments of Economics and History. Students may register in either department.

‡ Students who plan to register for this reading course should confer with the individual instructor as early as possible in the semester prior to enrollment, in order to receive the approval of the instructor and to reserve space in the course; students should also arrange with the instructor to receive reading lists, instructions, and advance assignments.

§ Staff of Instruction for the academic year 1964-65.



**Bachelor of Arts in Education.**—Prerequisite: the Education curriculum, page 59, or the equivalent, or a certificate of graduation from an approved normal school or the equivalent.

Required: the satisfactory completion of a program of at least sixty-six semester hours in addition to the general education background courses, page 59. Each program is planned individually to meet the certification requirements of the student, see pages 87–99.

American Thought and Civilization 101 *American Civilization* is recommended as a senior-year elective for Education majors.

**Master of Arts in Education.**—Prerequisite: a Bachelor's degree from an accredited institution. Programs are planned individually. The following areas of specialization are available: (1) adult education, (2) classroom teaching—to include strengthening mastery of teaching field, (3) comparative education, (4) curriculum, (5) elementary education, (6) employee training, (7) guidance, (8) health education, (9) history of education, (10) human growth and development, (11) philosophy of education, (12) physical education, (13) reading, (14) school administration, (15) secondary education, (16) special education, and (17) student personnel work in higher education. (See pages 103–5.)

American Thought and Civilization 101 *American Civilization* is available for graduate credit.

*Education Specialist.*—See pages 105–6.

*Doctor of Education.*—See pages 106–8

## Reading Center A Reading Clinic

Coleman and Staff

Diagnosis of reading difficulties; individual or group lessons without academic credit. Fee: for individual diagnosis, \$45; for individual instruction, \$6 a lesson; for semi-individual instruction, \$5 a lesson; for instruction in small groups with common reading difficulties, \$3.75.

## B Reading Improvement

Coleman and Staff

Classes, without academic credit, are offered for students on the high school, college, and college graduate levels. Students are grouped according to needs, and emphasis is placed on comprehension, vocabulary, study skills, spelling, and speed as needed. Fee: for full-time students currently registered in the University, \$45 a semester; for other clients, \$75 for twenty class periods. (Fall and spring—day and evening; summer 1965.)

## Second Group 108 Human Development, Learning, and Teaching (3)

McIntyre, McCune, Horrworth

Lecture (2 hours), conference (1 hour), field work (2 hours). For the general student as well as the prospective teacher. Principles of effective teaching based on an understanding of human development and the nature of learning. Prerequisite: Psychology 22 or 121. (Fall and spring—day and evening; summer 1965.)

## 111 Curriculum and Methods in the Elementary School (12 to 15)

McIntyre and Staff

For seniors in the elementary school curriculum. Methods, materials, appraisal, and field experiences in elementary schools. Problems and procedures in teaching arithmetic and science, art, the language arts (including reading, literature for children, oral and written expression, spelling, and handwriting), music, physical education, and social studies. Planning units of work, general classroom procedures, and evaluation of pupil progress. Observation and participation two mornings a week. Prerequisite: Education 108 and 123. (Fall—day.)

## 112 Educational Measurement (3)

Westerlund, Williams

Scope, needs, services to students, selection and construction of teacher-made

tests, interpretation of tests for evidence purposes. Prerequisite: Education 108 and 123. (Fall and spring—day and evening; summer 1965 (McCauley).)

- 113 **Elementary School Art (3)** Crump, Nowlin  
For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22, or 121. Material fee, \$4.50. (Fall and spring: lecture and laboratory (3 hours)—evening, field work—as arranged; summer 1965.)
- 114 **Elementary School Music (3)** Mitchell  
For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22, or 121. (Fall and spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1965.)
- 115 **Teaching of Reading in the Elementary School \* (3)** Parker  
A basic course in methods, techniques, materials, and activities essential to a good elementary school reading program. Prerequisite: Education 108 and 123, or teaching experience. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1965.)
- 116 **Social Studies in the Elementary School \* (3)** Trundle  
Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123, or teaching experience. (Fall: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1965.)
- 117 **Science in the Elementary School \* (3)** St. Cyr  
Content, methods, materials, and activities, essential in the elementary school curriculum. Prerequisite: Education 108 and 123, or teaching experience. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1965.)
- 120 **Mathematics in the Elementary School \* (3)** St. Cyr  
Content, methods, materials, concepts of "new mathematics," and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123, or teaching experience. (Fall: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1965.)
- 123 **Society and the School (3)** St. Cyr and Staff  
Lecture (2 hours), conference (1 hour), field work (2 hours). For the general student as well as the prospective teacher. Historical and social development of education at local, national, and international levels; co-operation of the school with other community agencies; functions of school personnel. (Fall and spring—day and evening; summer 1965 (Boswell).)
- 128 **Children's Literature (3)** Walker  
Exploring and evaluating the newer books for children and the children's classics, understanding the contribution of literature in child development, appreciating children's original expressions. Prerequisite: Psychology 1 and 22. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1965 (McIntyre).)
- 131 **Principles and Methods of Secondary School Teaching (3)** Boswell, Myers, Stallings  
For seniors in the secondary school curriculum. Course, unit, and lesson planning; practical techniques used in connection with motivation, the assignment, group procedures, directing study, individual differences, evaluation, clerical routines, disciplines, the homeroom, activity sponsorship, public relations. Prerequisite: Education 108 and 123. (Fall and spring—day.)

\* This course may not be taken by students who have completed or plan to enroll in Education 111.

- 134 **Student Teaching in Secondary Schools** (6 to 9) Boswell and Staff  
For seniors in the secondary school curriculum. Sections A, B, and C are for full-time academic majors. Section D is for physical education majors (Myers, Stallings). Student teaching fee, \$50. Admission by permission of the instructor. Prerequisite: Education 108 and 123. (134A: fall—as arranged; 134A, 134B, 134C, and 134D: spring—as arranged.)
- 135 **Student Teaching in Elementary Schools** (9) McIntyre, Rashid  
For seniors in the elementary school curriculum. Student teaching fee, \$50. Admission by permission of the instructor. Prerequisite: Education 108 and 123. (Fall and spring—as arranged.)

*Special Methods Courses* \* To be elected in the senior year after substantial preparation in the teaching fields concerned by the students in the secondary school curriculum. Course requirements and hours of credit vary with license requirements. Practices of successful teachers are studied, and actual teaching content as found in current texts and courses of study is reviewed.

- 136 **Teaching English in Secondary Schools** (2 to 4) Williams  
Prerequisite\*: 18 semester hours in English. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.)
- 137 **Teaching Speech** (2 to 4) Ervin  
Prerequisite\*: 18 semester hours in speech or the permission of the instructor. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.)
- 138 **Teaching Social Studies in Secondary Schools** (2 to 4) Boswell  
Prerequisite\*: 24 semester hours of social studies. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1965.)
- 139 **Teaching Art in Secondary Schools** (2 to 4) Crump  
Prerequisite\*: 24 semester hours of Art. (Spring: lecture (2 hours), laboratory (2 hours)—Saturday morning.)
- 140 **Teaching Mathematics in Secondary Schools** (2 to 4) Gates  
Prerequisite\*: Mathematics through calculus. (Spring—evening.)
- 141 **Teaching Latin** \* (3) Gerber  
Consideration of objectives in teaching Latin; construction of courses of study; techniques of motivation, presentation, and drill; areas of enrichment. Designed for both junior and senior high school teaching. (Summer 1965.)
- 142 **Teaching Music in Secondary Schools** (2 to 4)  
Prerequisite\*: 24 semester hours of Music. (Spring: lecture and laboratory to be arranged.)
- 144 **Teaching Science in Secondary Schools** (2 to 4) Eller  
Prerequisite\*: 24 to 40 semester hours of science. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.)
- 146 **Teaching Foreign Languages** (2 to 4) McSpadden  
Prerequisite\*: 18 semester hours of one foreign language. (Spring—day.)

\* Prerequisite to all special methods courses: Education 108, 123, and 131. Additional prerequisites are stated under each course.



- 150 Teaching Business Subjects (2 to 4)** Kiley  
Prerequisite\*: 30 semester hours of business education. (Spring—S 9:10–11 am.)
- 161 Management of the Hospital Nursing Unit (3)**  
Analysis of nursing today, the hospital, structure and changing functions, basic concepts of management, personnel practices and activities, inter-personal relationships, legal aspects and safety factors, economics—inventories, and evaluation procedures of the hospital nursing unit. (Offered through the College of General Studies.)
- 180 Introduction to the Education of Exceptional Children (3)** Botwin and Staff  
A survey course to acquaint prospective teachers of the retarded with the various types and degrees of mental, physical, social, and emotional deviations seen in the school population and to help them to accommodate such children in a school program. Prerequisite: Education 108 and 123, or the equivalent and permission of the adviser. (Fall—day; summer 1965.)
- 181 Nature and Needs of Exceptional Children I—the Mentally Retarded (3)** Fouracre  
Nature and needs of children with varying degrees of retardation. Causation and diagnosis of retardation and its psychological and sociological implications. Principles of learning with respect to teaching retarded children. Deviations of behavior in the mentally retarded. Prerequisite: Education 108 and 123, or the equivalent and permission of the adviser. (Fall—evening.)
- 185 Teaching Younger Mentally Retarded Children (Nursery and Elementary School Age) (3)** Cornish  
Educational methods and curriculum for the mentally retarded at different levels of maturity within the scope of the course. Organization and planning of instructional activities; selection and preparation of materials and equipment; community resources; records and reports; health and welfare services. Prerequisite: Education 180 and 181, or the equivalent and permission of the adviser. (Spring—day.)
- 186 Teaching Older Mentally Retarded Children (Junior and Senior High School Age) (3)** Botwin and Staff  
Methods and curriculum for the mentally retarded at different levels of maturity within the scope of the course. Organization and planning of instructional activities; selection and preparation of materials and equipment; community resources; records and reports; health and welfare services; occupational training, employment opportunities, job analyses; citizenship education. Prerequisite: Education 180 and 181, or the equivalent and permission of the adviser. (Spring—evening.)
- 187 Education of the Emotionally Disturbed Child (3)** Botwin and Staff  
Analysis of educational provisions for disturbed children including definitions, characteristics, identification, and programs for prevention and re-education. (Fall—day.)
- 189 Practicum in Teaching Exceptional Children (6 to 9)** Botwin and Staff  
Supervised student teaching in classrooms for exceptional children under the direction of a qualified teacher and the supervision of the University staff. Student teaching fee, \$50. A minimum of 150 clock hours is required for 6 semester hours of credit; 225, for 9 hours. Prerequisite: Education 180 and 181. (Fall and spring—as arranged.)

\* Prerequisite to all special methods courses: Education 108, 123, and 131. Additional prerequisites are stated under each course.

- Third Group \*** 201 **Seminar: Foundations of Education (3)** The Staff  
Designed to refresh previous study and to give additional depth of knowledge in the historical, philosophical, sociological, psychological, evaluation, measurement, and research foundations of education; and to guide study for the Master's degree comprehensive examination in these areas. (Fall and spring—evening.)
- 203-4 **Comparative Education (3-3)** Kempfer  
Comparison of foreign educational systems with those of the United States, particularly those of Russia, West Germany, Denmark, Switzerland, France, the British Isles, Canada, and Australia. (Academic year—evening.)
- 205-6 **The Curriculum † (3-3)** St. Cyr  
For experienced teachers. *First half:* curriculum foundations and issues; comparison of curriculum patterns. *Second half:* principles and procedures in curriculum development; group consideration of student problems. (Academic year—Saturday morning.)
- 207 **Curriculum Materials † (3)** St. Cyr  
For experienced teachers. Construction of courses of study, resource units, classroom teaching aids, and inexpensive materials; direct application to students' own situations. (Summer 1965.)
- 208 **Human Development, Learning, and Teaching (3)** Lang  
Lecture (2 hours), conference (1 hour), field work (2 hours). For graduate students. Principles of effective teaching based on an understanding of human growth and development and the nature of learning. Prerequisite: Psychology 1 and 22, or 121. (Fall and spring—evening.)
- 209 **Child Growth and Development (3)** Rashid  
An interdisciplinary approach to child development is emphasized. Special attention is given to the analysis, interpretation, and practical implications for instruction of significant research in the various disciplines which have contributed most to the knowledge of child development. (Fall—evening.)
- 210 **Adolescent Growth and Development (3)** Rashid  
An interdisciplinary approach to adolescent growth and development is emphasized. Particular attention is given to the analysis, interpretation, and practical implications for instruction of significant research in the various disciplines which have contributed most to the knowledge of the adolescent. (Spring—evening.)
- 212 **Educational Measurement (3)** McCauley  
Basic measurement techniques; construction, selection, administration, and interpretation of objective and essay-type examinations; statistical analysis of test results; laboratory experiences in the use of test instruments. (Fall—evening; summer 1965.)
- 213-14 **History of Education (3-3)** Williams  
*First half:* the European backgrounds of American education. *Second half:* the evolution of the American school system. (Academic year—evening.)
- 216 **Education of Slow-learning Children † (3)** Amos  
Identification, nature, and needs of slow-learning elementary and junior high school children. Emphasis on diagnosis and treatment of learning difficulties. (Summer-1965.)
- 217-18 **Philosophy of Education † (3-3)** Westerlund  
*First half:* designed to help students formulate a personal philosophy of education. *Second half:* social foundations of education—a study of the

\* A degree from an accredited institution is prerequisite to all third-group courses  
† Prerequisite: adequate professional preparation.



forces that shape the policies and offerings of the school. (Academic year—evening; summer 1965—Education 217 (3).)

- 219 **Elementary School Classroom Procedures \*** (3) Baker  
Current classroom practices with particular emphasis on ways of planning, unit teaching, techniques in discipline; individual and group evaluation techniques, resources for learning, providing for individual differences. (Not offered 1965–66.)
- 221 **Early Childhood Education \*** (3) McIntyre  
The philosophy and principles underlying the teaching of four- to seven-year olds. Emphasis is on organization, equipment, methods, and materials for promoting the growth needs of young children. (Summer 1965.)
- 223–24 **Reading Problems \*** (3–3) Coleman  
For experienced teachers. Study of reading difficulties on elementary and secondary school levels; classroom and clinical procedures in solving reading problems. (Academic year—evening; summer 1965—Education 223 (3).)
- 226 **Reading in Secondary Schools** (3)  
For experienced teachers. Consideration of special problems in the content areas, diagnostic and corrective techniques and materials for the classroom teacher, reading improvement programs. (Spring—evening.)
- 227 **Basic Issues in Elementary Education** (3) Baker  
A consideration of basic issues in the purposes, organization, and conduct of elementary education. Emphasis on the philosophical and psychological roots of fundamental assumptions as they relate to classroom practices. (Fall—Saturday morning; summer 1965.)
- 228 **Instructional Areas in Elementary Education** (3) Baker  
Critical appraisal of the objectives, organization, content, and teaching methods in the language arts, arithmetic, social studies, science, arts and crafts, health and physical education. (Spring—Saturday morning.)
- 229 **Administration of Elementary Education** (3) Carroll  
For experienced teachers and administrators. Administration as a means of achieving instructional objectives, organizing learning and teaching activities, handling supplies and equipment, maintaining the building, and integrating school and community life. Emphasis upon guide lines to action. (Fall—evening; summer 1965.)
- 231 **Secondary School Classroom Procedures \*** (3) Suber  
Survey of current classroom practices with particular attention to selected topics such as teacher-pupil planning, group procedures, pupil security, initiatory and culminating activities, individual and group evaluation techniques, teaching aids, etc.; review of recent literature. (Summer 1965.)
- 233 **Audio-visual Education \*** (3) Kubalak  
Lecture (2 hours), laboratory (1 hour). Role of audio-visual materials in learning; selection, evaluation, and use of materials; administrative problems in the care, operation, maintenance, and use of audio-visual materials and equipment. Material fee, \$7. (Spring—Saturday morning; summer 1965.)
- 241 **Education of the Gifted \*** (3) Amos  
For classroom teachers. Nature and discovery of giftedness, provisions for the gifted in regular classes, experimental projects. (Spring—evening; summer 1965.)
- 243 **Human Relations in the Classroom \*** (3) Marinaccio  
Principles and practices involved in interpersonal relationships between learner and teacher and among learners. (Summer 1965.)

\* Prerequisite: adequate professional preparation.



- 244 **Tests and Measurements for Exceptional Children** (3) Botwin and Staff  
Materials and methods of psychological, psychometric, and educational tests used in diagnosing and securing information concerning exceptional children. Prerequisite: Education 185 and 186 or the equivalent, or permission of the adviser. (Summer 1965.)
- 245 **School and Community** \* (3) Angel  
The school as an important member of a team of social agencies that builds the community. (Fall and spring—evening; summer 1965 (Williams).)
- 246 **Guidance and Counseling of the Mentally Retarded** (3) Cornish  
Educational, mental, social, and vocational guidance of mentally retarded children. The role of the teacher in parent counseling. Community agencies involved in post-school rehabilitation, guidance, and recreational services for the mentally retarded. Prerequisite: Education 185 and 186 or the equivalent, or permission of the adviser. (Summer 1965.)
- 247 **Vocational Education** \* (3) Walsh  
Development in the United States; current conceptions, agencies involved, problems, and trends. (Not offered 1965-66.)
- 248 **Student Personnel Work with College Groups** (3) Kirkbride  
The principles and procedures of personnel work with campus groups. The promotion, limitation, and coordination of campus group activities and the development of student leadership. (Spring—evening.)
- 49-50 **Practicum in Student Personnel Work** \* (1 to 3-1 to 3) Carew  
Supervised practical experience in student personnel services. Admission by permission of the instructor. (Academic year—as arranged.)
- 251 **Guidance in Elementary and Secondary Schools** \* (3) Detwiler  
A survey course: scope; needs; organization of the program; services to students, the instructional staff, and the administration; personnel needed for the program. (Fall and spring—evening; summer 1965.)
- 252 **Organization and Administration of Guidance Services** (3) Suber  
Designed for guidance directors and supervisors and experienced school counselors who hope to qualify for such positions in the near future. Prerequisite: a minimum of 15 semester hours of approved graduate work in measurement and guidance. (Spring—evening.)
- 253 **Analysis of the Individual for Purposes of Counseling** (3) Detwiler  
A detailed study of individual analysis techniques with practice in handling such methods. Prerequisite: Education 112 or the equivalent. (Fall and spring—evening; summer 1965 (McCauley).)
- 254 **The Junior High School** \* (3) Williams  
Purposes, organization, core program, guidance, developing course of study, extra-classroom activities. (Spring—evening.)
- 255-56 **Secondary Education** \* (3-3) Root  
*First half:* current proposals for the improvement of secondary education. *Second half:* current problems in each of the subject-matter fields. (Academic year—evening; summer 1965 (Root, Suber).)
- 257 **Occupational and Educational Information** (3) Detwiler  
Designed to acquaint vocational and educational counselors with the basic occupational and educational information necessary in counseling. Sources of data and techniques of collecting, analyzing, and disseminating for purposes of guidance. (Fall and spring—evening; summer 1965.)

\* Prerequisite: adequate professional preparation.

- 258 Techniques of Counseling (3)** McCauley  
An intensive study of the educational and psychological processes involved in counseling interviews. Specific types of vocational, educational, and personal counseling problems are discussed. **Prerequisite:** 12 semester hours in testing and guidance, including Education 253 and 257. In exceptional cases Education 253 or 257 may be taken concurrently with 258. (Fall and spring—evening; summer 1965.)
- 259-60 Secondary School Management \* (3-3)** Johnson  
For experienced teachers and administrators with two years of successful teaching in secondary schools. Management planning, execution, and control; criteria of good management; construction of the master schedule; leadership problems incident to the development of new policies and programs. (Academic year—evening.)
- 261-62 Practicum in Guidance (3-3)** Detwiler  
Supervised practical instruction in school guidance. **Prerequisite:** graduate work in counseling. Admission by permission of the Chairman of the Department. (Academic year—as arranged.)
- 263-64 Employee Training (3-3)** Walsh  
*First half:* nature and purpose, review of major programs—orientation, supervisory, apprentice, clerical skills, communication. *Second half:* administrative problems and practices, training media, coordination with other management functions. **Prerequisite:** adequate professional preparation or two years of experience in employee training. (Academic year—evening.)
- 265-66 Teaching Secondary School English—Materials, Resources, Content (3-3)** Williams  
A refresher course for teachers of English. Discussion of new approaches to course content. Offered in cooperation with the departments of English and Speech. *First half:* communication skills—structural linguistics, composition, and speech. *Second half:* American and English literature. (Academic year—evening.)
- 267-68 Teaching Secondary School Social Studies—Materials, Resources, Content (3-3)** Williams  
A refresher course for teachers of the social studies. Discussion of new approaches to course content. Offered in cooperation with the departments of History, Political Science, Geography and Regional Science, Economics, Anthropology, and Sociology. (Not offered 1965-66.)
- 269-70 Business Management of Schools I-II \* (3-3)** Carroll  
*First half:* Philosophy, responsibilities, and functions of the business management office in public education institutions; responsibilities of boards of education, superintendents, and central office staffs. *Second half:* planning and financing; building utilization, operation, and maintenance, transportation; lunchrooms; purchasing, storing, distribution; accounting and budgetary procedures; depreciation, insurance, and bond issues. (Not offered 1965-66.)
- 271 The Teacher and School Administration \* (3)** Suber, Carroll  
A survey course for teachers and prospective administrators. Education and world affairs, national agencies, role of the state, local administration, school finance, legal controls, school plant, public support, democratic administrative procedures, improving teaching conditions. (Fall—Saturday morning; spring—evening; summer 1965.)
- 272 The Teacher and School Supervision \* (3)** Carroll, Suber  
Nature, organization, human relationships, and techniques. (Fall—evening; spring—Saturday morning; summer 1965.)

\* **Prerequisite:** adequate professional preparation.



- 273-74 **Teacher Education \* (3-3)** Darland  
*First half:* aims, objectives, and basic issues; study of outstanding and experimental programs. *Second half:* recruitment and selection, general education, teaching-field preparation, professional sequences, laboratory experiences. (Academic year—evening.)
- 275 **School Finance \* (3)** Carroll  
 Educational financial theory, practice, and control, including methods of financing. (Fall—evening.)
- 276 **Seminar: Public Relations in School Administration \* (3)** Carroll  
 Purposes, gathering materials, disseminating agencies, publicity media, public participation in policy making. (Spring—evening.)
- 278 **School Law \* (3)**  
 Sources and scope of school law; legal rights and responsibilities of teachers, pupils, and taxpayers. Other legal problems of major interest to the group. (Spring—evening.)
- 279-80 **Adult Education \* (3-3)** Holden  
*First half:* current concepts and objectives, agencies involved, programs on all levels—international through community. *Second half:* the adult as a learner, the teacher of adults, learning-teaching activities, administration of adult education programs. (Academic year—evening; summer 1965—Education 279 (3).)
- 281 **Seminar: the Educational System of the Soviet Union (3)**  
 (Fall—evening.)
- 282 **Seminar: the Educational System of Communist China (3)**  
 (Spring—evening.)
- 283-84 **Higher Education \* (3-3)** Rogers  
*First half:* development, present status, and outlook for American colleges; purposes of higher education, current and projected programs; trends in curriculum, instruction, administration, and evaluation of outcomes. *Second half:* principles in development of college programs; study of curricula in liberal arts and professional fields; relationship of institutional services and facilities to the instructional program. (Academic year—evening.)
- 285 **Student Activities \* (3)** Suber  
 Nature and purposes of selected activities—homeroom, clubs, assemblies, school publications, student council, interscholastic contest; particular attention to sponsorship, participation, finance, and evaluation. (Summer 1965.)
- 286 **Introduction to Student Personnel Work (3)** Kirkbride  
 A basic survey course of student personnel services in American higher education. Personnel work as an integral part of the college program of instruction is stressed, with an introduction being given to the literature of the field. (Fall—evening.)
- 287-88 **Clinical Study of Reading Problems \* (3-3)** Coleman  
 For advanced students. Diagnostic and corrective work under supervision of the Reading Center. Each student is expected to diagnose and treat pupils who are retarded in reading. Case studies are presented and criticized. Prerequisite: Education 223-24 or the equivalent. Material fee, \$5 a semester. (Academic year—evening.)
- 289 **Supervisory Problems in Reading \* (3)** Coleman  
 For experienced teachers, principals, supervisors, and superintendents. Problems involved in planning, reorganizing, and improving the total reading

\* Prerequisite: adequate professional preparation



program, in promoting cooperative effort on the part of the staff toward increasing teaching efficiency. (Not offered 1965-66.)

- 291 **Planning the School Plant (3)** Suber  
Selection of sites; evaluation of existing buildings; utilization of present facilities; adaptation to curricular needs; building, operation, and maintenance problems. (Not offered 1965-66.)
- 293-94 **Research (3-3)** The Staff  
Individual research under the guidance of a member of the staff. Program and conferences arranged with an instructor. (Academic year—as arranged; summer 1965.)
- 295 **Educational Research Methods and Procedures (3)** McCauley, Westerlund  
Required of all candidates for graduate degrees in Education. To be taken early in the student's graduate program. Prerequisite: an elementary course in statistics. (Fall and spring—day and evening; summer 1965.)
- 296 **Seminar: Educational Research (3)** McCauley  
Designed to help students analyze scientific approaches to problems in education; evaluate the application of research techniques to typical problems; define, organize, and conduct research studies; and prepare proposals for sponsored research. Required of all candidates for the Doctor of Education degree and open, with permission, to candidates for other advanced degrees. Prerequisite: Education 295 or the equivalent. (Spring—evening.)
- 297 **Personnel Administration (3)** Carroll  
(Formerly Education 277)  
Organization and administration of personnel programs for educational institutions. Basic philosophy, principles, responsibilities, and functions (Fall—evening; summer 1965—offered as Education 277 (3).)
- 298 **Seminar: Personnel Administration (3)** Carroll  
Research: policies, rules and regulations, staff organizations, negotiations. (Spring—evening.)
- 299-300 **Thesis (3-3)** The Staff  
Required of all Master of Arts in Education candidates writing Master's theses. (Academic year—as arranged; summer 1965.)
- 313 **Cultural Deprivation and Mental Health as They Relate to Emotionally Disturbed Children (3)** Botwin and Staff  
Mental health problems affecting the culturally deprived child's vocational, educational, and emotional needs; teacher-child relationships; language differences in various socioeconomic environments. (Spring—evening.)
- 314 **Etiology and Treatment of Emotional Disturbances (3)** Botwin and Staff  
Through the discipline of psychiatry to better understand the causes for and treatment of emotional disturbance and social maladjustment. (Spring—day.)
- 315 **Seminar: Emotional Disturbance (3)** Botwin and Staff  
Includes trends in research, community attitudes, institutional care, readings, and various schools of thought on educational philosophy and techniques. (Spring—day.)
- 321 **Psychology of Exceptional Children (3)** Botwin and Staff  
Consideration of basic psychological problems and research pertaining to handicapped children with emphasis on the study of social, emotional, physical, and learning characteristics of the various types of handicapping conditions. (Spring—day.)

- 322 **Problems and Issues in Mental Retardation (3)** Botwin and Staff  
Problems in identification, diagnosis, and placement; emphasis on problems involved in providing education and social control; and teaching methodology as well as equipment and supplies. (Fall—day.)
- 323 **Administration and Supervision of Special Education (3)** Botwin and Staff  
Philosophy and nature of special education; program organization, administration, and development. Surveying local level needs; program evaluation and supervision. (Not offered 1965–66.)
- 324 **Recent Research and Trends in Mental Retardation (3)** Botwin and Staff  
Definitions, theories, classifications; social, medical, psychological, and educational rehabilitation measures. Emphasis on current contributions of biology, sociology, and psychology to educational theory and practice. (Spring—evening.)
- 355 **Group Counseling Practicum (3)** The Staff  
A study of the peer group relationships with particular reference to adolescent groups. Principles of group dynamics as related to the interaction within groups. Techniques and practice in group counseling. For experienced counselors and psychologists. (Fall—Saturday morning.)
- 356 **Seminar: Guidance and the Disciplines (3)** The Staff  
Exploring the foundations of guidance through the disciplines of psychology, sociology, economics, anthropology, and philosophy. For experienced counselors. (Spring—Saturday morning.)

**Fourth Group** A Master's degree from an accredited institution is prerequisite to all fourth-group courses. All of the seminars listed in the fourth group are open to doctoral candidates or to other post-Master's degree students with the approval of the instructor. Study is individually planned on the basis of previous study and experience in the subject field to attain an advanced level of competence and meet identified professional needs or field requirements in a doctoral program.

- 401–2 **Seminar: History of Education (3–3)** Williams  
(Academic year—as arranged; summer 1965.)
- 403–4 **Seminar: Philosophy of Education (3–3)** Westerlund  
(Academic year—as arranged; summer 1965.)
- 405–6 **Seminar: Human Growth and Development (3–3)** Rashid  
(Academic year—as arranged; summer 1965.)
- 411–12 **Seminar: Elementary Education (3–3)** Baker  
(Academic year—as arranged; summer 1965.)
- 413–14 **Seminar: Secondary Education (3–3)** Root  
(Academic year—as arranged; summer 1965.)
- 421–22 **Seminar: Adult Education (3–3)** Detwiler  
(Academic year—as arranged; summer 1965.)
- 423–24 **Seminar: Higher Education (3–3)**  
(Academic year—as arranged; summer 1965.)
- 425–26 **Seminar: Teacher Education (3–3)** Baker  
(Academic year—as arranged; summer 1965.)
- 427–28 **Seminar: Employee Training (3–3)** Root  
(Academic year—as arranged; summer 1965.)

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|--------|--|----------------|
| 431-32 | <b>Seminar: Administration (3-3)</b><br>(Academic year—as arranged; summer 1965.)  | Carroll, Suber |
| 433-34 | <b>Seminar: Supervision (3-3)</b><br>(Academic year—as arranged; summer 1965.)   | Carroll, Suber |
| 435-36 | <b>Seminar: Elementary Administration (3-3)</b><br>(Academic year—as arranged; summer 1965.)   | Carroll        |
| 437-38 | <b>Seminar: Secondary Administration (3-3)</b><br>(Academic year—as arranged; summer 1965.)  | Suber          |
| 441-42 | <b>Seminar: Curriculum (3-3)</b><br>(Academic year—as arranged; summer 1965.)  | St. Cyr        |
| 443-44 | <b>Seminar: Guidance and Counseling (3-3)</b><br>(Academic year—as arranged; summer 1965.)   | Detwiler       |
| 445-46 | <b>Seminar: Research and Evaluation (3-3)</b><br>(Academic year—as arranged; summer 1965.)   | McCauley       |
| 451-52 | <b>Seminar: Special Education (3-3)</b><br>(Academic year—as arranged; summer 1965.)   | Botwin         |
| 491-92 | <b>Dissertation (3-3)</b><br>Preparation of a research design, research, and writing of an approved doctoral dissertation under the direction of a major adviser and dissertation committee. (Academic year—as arranged; summer 1965.) | The Staff      |

#### **SPECIAL PROGRAM IN ELEMENTARY TEACHER EDUCATION**

The following courses are open only to students in the Special Program in Elementary Teacher Education.

- 107 **Foundations for Elementary School Teaching (9)** Rashid, Horrworth  
A block course, dealing with the history of education, the psychological foundations of elementary education, the nature of elementary education, and the elementary school in our society. The content of traditional courses in educational psychology; history of education; human development, learning, and teaching; society and the school; and introduction to elementary education will be covered. One hundred and thirty-five class hours, supplemented by field experiences. (Summer 1965.)
- 119 **Elementary School Curriculum (12)** Rashid and Staff  
A block course, identifying the essential experiences for the education of elementary school children and working toward initial competence in the methods and materials for providing such experiences. The subject areas of reading, children's literature, communication arts, arithmetic, science, social studies, art, music, and physical education are included. One hundred and eighty class hours, supplemented by appropriate observations and field experiences. (Fall—day.)



**230 Seminar for Interns in Elementary School Teaching (3)**

**Rashid and Staff**

Scheduled weekly meetings for discussion of common problems and for cooperatively planned work on areas of individual and group needs. (Spring—Saturday morning.)

**OFFERED IN AFFILIATION WITH THE WASHINGTON SCHOOL OF PSYCHIATRY**

The following Education courses, offered by the Washington School of Psychiatry in affiliation with The George Washington University, are available to graduate students in the School of Education and to qualified students in the Division of University Students. The Staff of the Washington School of Psychiatry will conduct these courses at the School of Psychiatry, 1610 New Hampshire Avenue, NW., Washington, D. C.

**234 Communication Skills for Teachers and Principals (3) Bernstein**

The life-space interview in the school setting between the teacher and the child or the principal and the child; the planned interview between the teacher and the parent or the principal and the parent. (Summer 1965.)

**235 Role of the Teacher in the Changing Community (3)**

Racial, ethnic, and social class population shifts and accompanying problems of housing, health, and public safety, with emphasis on the human relations and mental health aspects of the current situation; supports, techniques, and resources available to educators. (Fall and spring—evening.)

**236 Emotional Factors in Learning (3) Hypps**

For counselors and guidance staff, principals, special education teachers, pupil personnel workers. Problems of guidance derived from divergent or pathological motivational patterns in the child or family. Class limited to 25 students. (Fall and spring—evening.)

**237 Emotional Problems Confronting the Teacher (3) Kehne**

The teacher's relationship with other teachers, the administration, the school system, and pupils; techniques of interviewing and dealing with parents, members of the school staff, and the community. (Fall and spring—evening.)

**238 Seminar: Learning Problems and Disabilities (3)**

Emotional learning blocks, socioeconomic disadvantages, brain damage and hyperactivity, psychosomatic symptoms and health questions affecting learning, curriculum planning and its relation to mental health and learning growth, communication and motivation. (Spring—evening.)

**239 Educational Problems of the Urban Child (2)**

Mental health problems affecting the urban child's vocational, educational, and emotional needs; teacher-child relationship, language differences in various socioeconomic environments. Curriculum planning. (Fall and spring—evening.)

**240 Techniques of Interviewing for Teachers and School Staff (3)**

An intensive study of specific interview techniques and requisite skills. Specific problems encountered by teachers and staff will be discussed. (Fall and spring—evening.)

## English\*

*Professors* E. S. Shepard, C. D. Linton, C. W. Cole, R. H. Moore, J. H. Coberly, P. H. Highfill, Jr., J. G. Allee, Jr., J. P. Reesing, Jr., (*Chairman*), R. H. Walker, Jr., Milton Crane

*Adjunct Professor* J. C. Broderick

*Associate Professors* W. L. Turner, Muriel McClanahan, Elizabeth Wright, S. J. Brown, R. N. Ganz

*Assistant Professors* R. C. Rutledge, Louise Clubb, R. R. Columbus, J. A. Quitslund, R. E. Stockton

*Assistant Professorial Lecturers* J. J. Monroe, John Gigrich

*Instructors* F. R. Turaj, J. A. L. Lemay, R. F. Marler, Jr., Andrea Santer, Mary Cunningham, Barbara Dunham, D. R. Janis, J. R. Greenya, Karen Lachowitch, Beatrice O'Donnell

*Instructors (part-time)* J. S. Toomey, Eileen Allen, V. C. Trofi, D. F. White, Edgar Boling, Elna Broffman, Harrison Clark, James Gabriel, Lianna Larabee, Donna Lerew, Mary McHenry, Norma McQueen, Gertrude Mitchell, Ruth Sherman, Helen Sutton

*Bachelor of Arts with a major in American Thought and Civilization (Field-of-Study)*†.—Prerequisite: the Arts and Letters curriculum, page 57.

Required: the general requirements, pages 63–67, and the passing of the American Thought and Civilization major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined is summarized under four general headings: (1) European cultural history—the Renaissance and modern social and intellectual cultures as a background to contemporary civilization with particular attention to English literature and history from the 16th through the 19th centuries; (2) American history—the political, economic, social, and religious thought and experience of the American people; (3) American philosophy and fine arts—a survey of periods and movements with a knowledge of outstanding individuals; (4) American literature—a knowledge of major writers, together with a study of poetry, fiction, and drama. The Department of English provides a proseminar (English 179–80) intended to assist the student in preparing himself for the major examination. The major adviser will give to each student at registration a check list of available courses grouped as prerequisite, necessary, or desirable for the completion of the major study program.

American Thought and Civilization 101 *American Civilization* is recommended as a senior-year elective for American Thought and Civilization majors.

*Bachelor of Arts with a major in English Literature (Field-of-Study)*.—Prerequisite: the Arts and Letters curriculum, page 57. It is recommended that prospective majors elect English 91–92 from among the listed offerings.

Required: the general requirements, pages 63–67, and the passing of the English Literature major examination at the end of the senior year. The field of coordinated knowledge upon which the student will be examined at the end of his senior year is summarized under the following general headings: (1) the history of English literature from the Anglo-Saxon period; (2) the chief English writers (a certain familiarity with each man and his main works and a detailed knowledge of Shakespeare); (3) English social and political history as it bears upon or is reflected in the literature; (4) European intellectual backgrounds and movements which have affected English literature. The proportion of work taken in each of these areas should be worked out by the student in consultation with one of the English Literature advisers. The Department of English provides a proseminar (English 199–200) to assist the student in preparing himself for the

\* Staff of Instruction for the academic year 1964–65.

† See page 159 for description of American Thought and Civilization University-sponsored course



major examination. A detailed description of the major is available in the Office of the Dean of Columbian College of Arts and Sciences.

American Thought and Civilization 101 *American Civilization* is recommended as a senior-year elective for English Literature majors.

*Master of Arts in the field of American Literary and Cultural History*\*.—

Prerequisite: the equivalent of an undergraduate major in this University in (1) History (with American history as a major part), (2) American Thought and Civilization, or (3) English Literature (with introductory courses in American literature and American history). The student who has not taken any of these majors at this University must take a candidacy examination.

Required: in addition to the general requirements, pages 69–71, the following specific requirements must be met: twelve of the required semester hours must be of seminar study, six in American history and six in American literature; twelve of the required semester hours must be of second- and third-group courses in the fields of American history, literature, philosophy, education, and art recommended by the adviser; a thesis (six semester hours) in any of the foregoing fields or in some combination of them. Because of the various undergraduate majors which will be accepted for admission to this program, a basic reading list is assigned to all students, to assist in preparing them for the final Master's examination.

*Master of Arts in the field of English and American Literature*.—Prerequisite: an undergraduate major in English Literature or American Thought and Civilization at this University; or twenty-four semester hours in English and/or American literature above the sophomore level. The student who has not taken either of these majors at this University must take a candidacy examination. The student offering preparation both in English and American literature will be examined in English and American literature.

Required: in addition to the general requirements, pages 69–71, the following specific requirements must be met: (1) a schedule of courses amounting to twenty-four semester hours, planned in consultation with the adviser on the basis of the student's undergraduate preparation, to include a comprehensive survey of American literature and of English literature from 1600; (2) a Master's thesis (six semester hours) written upon an approved topic under the direction of the instructor in whose field the major portion of the material falls; (3) a final written examination on American literature and on English literature from 1600.

*Master of Arts in the field of English Literature*.—Prerequisite: an undergraduate major in English Literature at this University, or twenty-four semester hours in English literature above the sophomore level. The student who has not passed the major examination in English at this University must take a candidacy examination which, in its scope and difficulty, is comparable to the major examination in English.

Required: in addition to the general requirements, pages 69–71, the following specific requirements must be met: (1) a schedule of courses amounting to twenty-four semester hours, planned in consultation with the adviser; (2) a Master's thesis (six semester hours) written upon an approved topic under the direction of the instructor in whose field the material falls, and (3) a final written examination.

*Master of Arts in the field of Linguistics*.—See pages 258–59, and the departments of Germanic Languages and Literatures and Romance Languages and Literatures.

*Doctor of Philosophy*.—See pages 75–84.

*Bachelor of Arts in Education with a teaching field in English*.—Prerequisite: the Education curriculum, page 59.

Required: the English option and the professional courses listed on page 99.

\* See page 159 for description of American Thought and Civilization University-sponsored course.



## ENGLISH COMPOSITION \*

### A English for Foreign Students (3) Wright and Staff *First Group*

A course in reading and writing designed to assist the foreign student in overcoming deficiencies in the use of English. Special attention is given to spelling, syntax, grammar, idiom, and vocabulary. (Fall and spring—day and evening; summer 1965.)

### B English for Foreign Students (3) Wright and Staff

For second-semester foreign students not yet ready for English 1. Writing of expository paragraphs and themes; outlining; reading for comprehension, vocabulary, and style. (Fall—evening; spring—day and evening; summer 1965.)

### 1 English Composition \* (3) Moore and Staff

A course in the analysis and practice of expository techniques with emphasis on unity, development, and organization. (Fall and spring—day and evening; summer 1965.)

### 1x English Composition \* (3) Moore and Staff

An intensive course in English grammar and composition to which are assigned students whose placement tests show them inadequately prepared for the regular work of English 1. The course begins with detailed instruction, drill, and exercises in the basic structure of the English language and in the writing of paragraphs; it continues with the content of English 1. English 1x meets five hours a week and carries 3 semester hours of credit. The total fee is \$163 (the tuition fee of \$138 plus an additional fee of \$25.) (Fall and spring—day and evening; summer 1965.)

### 2 English Composition \* (3) Moore and Staff

For second-semester freshmen not following the Columbian College of Arts and Sciences sequence. Readings and practice in expository and argumentative techniques and in research procedure. Credit is not given for students who have credit for English 4. Prerequisite: English 1 or 1x. (Fall and spring—day and evening; summer 1965.)

### 4 English Composition \* (3) Moore and Staff

The second half of the six-hour English Composition course required of students in Columbian College. A course in critical analysis and practice in expository and argumentative techniques and in research procedure. Credit is not given for students who have credit for English 2. Prerequisite: English 1 or 1x and both semesters of one of the introductory literature courses. (Fall and spring—day and evening; summer 1965.)

### 109 Expository Writing (3) McClanahan *Second Group*

A study of types of expository writing with weekly exercises based on students' needs; particular attention may be given to problems in the writing of graduate theses. Prerequisite: English 1 or 1x, and 2 or 4. (Fall—day.)

\* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared are assigned to English 1x.

All students enrolled in curricula leading to Bachelor's degrees in Columbian College (who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, Russian or Slavic, or Spanish) will follow the sequence of English 1 or 1x, both semesters of one of the introductory literature courses, and English 4.

English 1 or 1x is prerequisite to all other courses in English. English 2 is the second half of the six hour composition course requirement of students not required to follow the Columbian College of Arts and Sciences sequence

**113 Narrative Writing (3)**

Study of the techniques of narrative writing and class criticism of student writing. Prerequisite: English 1 or 1x, and 2 or 4. (Fall—day and evening.)

**114 The Writing of Fiction—the Short Story (3)**

Prerequisite: English 113; consent of instructor. (Fall—evening.)

**117-18 The Writing of Fiction—the Novel (3-3)**

Writing a novel. Prerequisite: English 114; consent of instructor. (Academic year—evening.)

**120 The Writing of Poetry (3)**

Prerequisite: consent of the instructor. (Spring—evening.)

**ENGLISH LITERATURE**

*First Group* 51-52 **Introduction to English Literature \*** (3-3) Highfill and Staff  
Historical survey. Prerequisite: English 1 or 1x. (Academic year—day and evening; summer 1965.)

91-92 **Introduction to European Literature \*** (3-3) Shepard and Staff  
Consideration of various types. Prerequisite: English 1 or 1x. (Academic year—day and evening.)

*Second Group \** 121 **Medieval English Literature—Exclusive of Chaucer** (3) Allee  
(Summer 1965.)

122 **Chaucer** (3) Allee  
(Spring—evening.)

125 **Introduction to English Linguistics** (3) Allee  
The development of the English language in a historical treatment of English grammar. (Fall—evening.)

129-30 **Elizabethan Nondramatic Literature** (3-3) Quitslund  
Nondramatic literature from 1485 to 1601. (Academic year—evening.)

135-36 **Shakespeare** (3-3) Highfill, Crane  
(Academic year—day and evening.)

139-40 **The 17th Century** (3-3) Linton  
*First half:* poetry and prose from 1603 to 1660. *Second half:* Milton. (Academic year—day; summer 1965—English 139 (3).)

141-42 **English Literature, 1660-1780** (3-3) Highfill  
Poetry and prose of the Neoclassic period. *First half:* from 1660 to 1740. *Second half:* from 1740 to 1780. (*First half:* summer 1965. *Second half:* not offered 1965-66.)

151-52 **The Romantic Movement** (3-3) Reesing  
Poetry and prose from 1780-1830. (Academic year—evening; summer 1965—English 152 (3).)

\* All students enrolled in curricula leading to Bachelor's degrees in Columbian College (who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, Russian or Slavic, or Spanish) will follow the sequence of English 1 or 1x, both semesters of one of the introductory literature courses, and English 4.

English 51-52, 71-72, 91-92, Classical Languages 71-72, French 51-52, German 51-52, Russian 91-92 or Slavic 93-94, or Spanish 51-52 is prerequisite to all second-group courses except English 125.

- 161-62 **Victorian Literature (3-3)** Columbus  
Poetry and prose from 1830 to 1900. *First half:* from 1830 to 1858.  
*Second half:* from 1859 to 1900. (Academic year—day.)
- 165-66 **The 20th Century (3-3)** Linton  
British poetry, prose, and drama since 1900. (Academic year—day.)
- 181-82 **The English Novel (3-3)** Clubb  
Major English novelists of the 18th and 19th centuries. (Academic year—evening.)
- 183-84 **The English Drama (3-3)** Highfill  
*First half:* concerned principally with the drama of Shakespeare's contemporaries. *Second half:* a historical survey from 1660 to the present day. (Academic year—day.)
- 192 **Medieval Legend and Saga (3)** Allee  
Celtic and Norse. (Not offered 1965-66.)
- 199-200 **Proseminar: Readings for the English Literature Major (3-3)** Reesing and Staff  
Conferences and group discussions. (Academic year—day and evening.)
- 223-24 **Old English (3-3)** Allee *Third Group*  
English language and literature before 1100. *First half:* Old English grammar and readings. *Second half:* Beowulf. (Not offered 1965-66.)
- 229-30 **Studies in Elizabethan Nondramatic Literature (3-3)** Clubb  
Prerequisite: English 129-30. (Academic year—day.)
- 235-36 **Studies in Shakespeare and His Contemporaries (3-3)** Crane  
Prerequisite: English 135-36. (Academic year—evening.)
- 239-40 **Studies in 17th Century Literature (3-3)** Reesing  
Open to qualified undergraduates. *First half:* chief figures exclusive of Milton. *Second half:* Milton. (Not offered 1965-66.)
- 241-42 **Studies in Neoclassical Literature (3-3)** Highfill  
Prerequisite: English 141-42. (Not offered 1965-66.)
- 251-52 **Studies in the Romantic Movement (3-3)** Reesing  
Prerequisite: English 151-52. (Not offered 1965-66.)
- 261-62 **Studies in Victorian Literature (3-3)** Columbus  
Prerequisite: English 161-62. (Academic year—evening; summer 1965—English 261 (3).)
- 265-66 **Studies in 20th Century Literature (3-3)** Linton  
Eliot and his contemporaries. (Not offered 1965-66.)
- 279 **Research Methods and Bibliographical Materials (3-3)** Broderick  
(Formerly English 273)  
For description of course see American Literature 279, page 211. (Fall—evening.)
- 283-84 **Studies in the History of the British Drama and Theater (3-3)** Highfill  
Prerequisite: English 135-36, or 183-84, or 175-76, or the equivalent. (Academic year—day; summer 1965—English 283 (3).)



295-96 **Studies in the History of English Literary Criticism** (3-3) Shepard  
Open to undergraduates with the approval of the instructor. (Not offered 1965-66.)

299-300 **Thesis** (3-3) The Staff

### AMERICAN LITERATURE

*First Group* 71-72 **Introduction to American Literature** \* (3-3) Cole and Staff  
A historical survey. *First half*: from the beginnings to the Civil War. *Second half*: from the Civil War to the present. Prerequisite: English 1 or 1x. (Academic year—day and evening; summer 1965.)

*Second Group* 170 **The American Short Story** (3) Coberly  
The historical development of the short story in America. (Fall—day; spring—evening.)

171-72 **Studies in American Literature** (3-3) Turner  
Major factors in the national cultural tradition as shown by outstanding writers. Prerequisite: English 51-52 or 71-72. (Academic year—day and evening; summer 1965—English 172 (3).)

173-74 **Major American Poets** (3-3) Ganz  
Advanced critical study of significant writers and movements. *First half*: from beginnings through 19th century. *Second half*: the 20th century. (Academic year—evening; summer 1965.)

175-76 **American Drama** (3-3) Cole  
Historical and critical study of significant plays and forms. *First half*: from beginnings to 1930. *Second half*: since 1930. (Academic year—day; summer 1965.)

177-78 **The American Novel** (3-3) Coberly  
Historical and critical study of significant novels and short stories. *First half*: from beginnings through 19th century. *Second half*: the 20th century. (Academic year—day.)

179-80 **Proseminar: Readings for American Thought and Civilization Majors** (3-3) Walker and Staff  
Conferences and group discussions. (Academic year—day and evening.)

*Third Group* 270 **Seminar: the American Short Story** (3) Coberly  
(Summer 1965.)

271-72 **Seminar: American Thought** (3-3) Walker  
Intensive consideration of specific periods and themes, primarily literary, in the history of American civilization. Prerequisite: English 171-72 or the equivalent. (Not offered 1965-66.)

273-74 **Seminar: Studies in American Poetry** (3-3) Ganz  
Prerequisite: English 173-74 or the equivalent. (Academic year—evening; summer 1965—English 274 (3).)

\* All students enrolled in curricula leading to Bachelor's degrees in Columbian College (who are required to take one year of English composition and one year of literature in English. Classical Languages, French, German, Russian or Slavic, or Spanish) will follow the sequence of English 1 or 1x, both semesters of one of the introductory literature courses, and English 4.

English 51-52, 71-72, 91-92, Classical Languages 71-72, French 51-52, German 51-52, Russian 91-92 or Slavic 93-94, or Spanish 51-52 is prerequisite to all second group courses except English 171-72.

- 277-78 **Studies in American Fiction (3-3)** Coberly  
Prerequisite: English 177-78 or the equivalent. Open to the undergraduate with the approval of the instructor. (Academic year—evening.)
- 279 **Research Methods and Bibliographical Materials (3)** Broderick  
(Formerly English 273)  
To acquaint graduate students with the principal sources of bibliography and with typical problems in research. (Fall—evening.)
- 280 **Studies in American Transcendentalism (3)** Broderick  
(Spring—evening.)
- 281-82 **Reading Course in American Civilization (3-3)** Walker  
A consideration of the principal descriptive and interpretive works dealing with American civilization, with emphasis on the interdisciplinary understanding of this subject. Prerequisite: at least one upper-division or graduate course in both American literature and American history. (Not offered 1965-66.)
- 287-88 **Reading Course in American Fiction (3-3)** Coberly  
Primarily for graduate students, designed to cover the literature and the critical materials for which the student will be responsible on comprehensive and final examinations. (Not offered 1965-66.)
- 289-90 **Thesis (3-3)** The Staff

#### RELATED COURSES IN OTHER DEPARTMENTS

Classical Languages and Literatures 71-72 *Greek and Roman Backgrounds in Literature* (3-3)  
Education 136 *Teaching English in Secondary Schools* (3)  
History 71-72 *The Development of the Civilization of the United States* (3-3)  
History 151-52 *English History* (3-3)  
Philosophy 111-12 *History of Philosophy* (3-3)  
Philosophy 172 *American Philosophy* (3)  
Speech B-C *American Speech for Foreign Students* (3-3)  
Speech 102 *Oral Interpretation of Literature* (3)

#### COURSE OFFERED IN AMERICAN STUDIES INSTITUTE SUMMER 1965

- 172 *Studies in American Literature* (3)

#### ENGLISH INSTITUTE—SUMMER 1965 (English 209)

Modeled on the curriculum established by the Commission on English of the College Entrance Examination Board, the Institute offers classes daily in the areas of literature, language, and composition, plus three workshops each week. The program carries 6 semester hours of credit applicable toward graduate degrees in Education. Enrollment limited. (Detailed information is available in the Office of the Dean of the Summer Sessions.)

#### French

See "Romance Languages and Literatures."

## Geography and Regional Science\*

Professors R. D. Campbell (*Chairman*), H. W. Westermann, Samuel Van Valkenburg (*Visiting*)

Professorial Lecturer Victor Petrov

Associate Professor J. T. Davis (*Acting Chairman*)

Assistant Professor A. R. Gassaway

*Bachelor of Arts with a major in Geography (Departmental).*—Prerequisite: the Arts and Letters curriculum, page 57, including Geography 51, 52, and Geology 1-2.

Required: in addition to the general requirements, pages 63-67, twenty-six semester hours of Geography beyond first-group courses, including Geography 103-4, 105-6, and 189-90, six hours from Group A and three hours from Group B. The remaining three hours to be taken from either Group A or Group B.

Group A: Geography 126, 127, 141-42, 145, 146. Group B: Geography 151, 153, 154, 155, 156, 161, 164, 165, 166.

American Thought and Civilization 101 *American Civilization* is recommended as a senior-year elective for Geography majors.

*Bachelor of Arts with a major in Urban and Regional Development (Departmental).*—Prerequisite: the Arts and Letters curriculum, page 57, including Geography 51, 52; Geology 1-2; and Statistics 91.

Required: in addition to the general requirements, pages 63-67, thirty-two semester hours of Geography beyond first-group courses which must include Geography 103-4, 133, 134, 141-42, 173-74, and 179-80. Required also are Political Science 104 and Statistics 117. It is recommended that electives be chosen from among the following courses: Sociology 126, 135, 147; Economics 161-62; Political Science 146; History 111-12; and Philosophy 121-22.

American Thought and Civilization 101 *American Civilization* is recommended as a senior-year elective for Urban and Regional Development majors.

*Bachelor of Arts with a major in Regional Science (Departmental).*—Prerequisite: the Arts and Letters curriculum, page 57, including Geography 51, 52; Geology 1-2; Statistics 91; and Mathematics 21, 22, 23, 24.

Required: in addition to the general requirements, pages 63-67, twenty-nine semester hours of Geography, which must include Geography 103-4, 179-80, and twenty-one semester hours selected from Geography 124, 125, 133, 134, 141-42, 173-74, 175-76. Required also are Statistics 117, 118, 157-58; Philosophy 121-22; Political Science 104.

American Thought and Civilization 101 *American Civilization* is recommended as a senior-year elective for Regional Science majors.

*Master of Arts in the field of Geography.*—The general requirements, pages 69-71, including Geography 201-2, 205-6, 299-300.

*Master of Arts in the field of Urban and Regional Development.*—The general requirements, pages 69-71, including Geography 205-6, 233-34, 253-54, and 299-300.

*Doctor of Philosophy.*—See pages 75-84.

*Bachelor of Science in Geodetic and Cartographic Science.*—See pages 216-17, "Courses Offered in Special Programs" and the College of General Studies Catalogue for complete details.

*Bachelor of Arts in Education with a teaching field in Geography.*—Prerequisite: the Education curriculum, page 59.

Required: the Geography option and the professional courses listed on page 99.

\* Staff of Instruction for the academic year 1964-65.



**51 Introduction to Geography (3)** **The Staff** *First Group*

A study of place attributes and characteristics, patterns and associations of physical and cultural earth features. (Fall and spring—day and evening.)

**52 World Regions (3)** **The Staff**

The analysis of world regional divisions, descriptions and interpretation of region complexes, evaluation of regional differences as they affect the distribution and activities of man. (Fall and spring—day and evening.)

Courses numbered 151, 153, 154, 155, 156, 161, 164, 165, 166, and 169 are geographic surveys of various regions and provide introduction to more detailed study. No prerequisites are required. Terrain features and climate and the nature and distribution of cultural phenomena are considered in a regional context. Interrelationships among the various elements and nations are discussed and evaluated. *Second Group*

**103-4 Cartography (3-3)** **The Staff**

A year course: credit is not given for the first half until the second half is completed. Principles of cartographic drafting, elementary map projections, map and graph planning design and construction, uses and interpretation of maps. Prerequisite: Geography 51 and 52. Laboratory fee, \$11 a semester. (Academic year—Saturday morning.)

**105-6 Regional Climatology (3-3)** **Van Valkenburg**

Detailed survey of the climates of the world; their distribution and genesis and their impact on the economy, with special reference to the use of land. (Academic year—evening.)

**124 Land Capabilities (3)** **Davis**

Analysis of location; physical characteristics and economic and social contexts as they contribute to land development potential. (Fall—evening.)

**125 Transportation Complexes (3)** **Davis**

A study of transportation functions, principles governing the evolution of transportation systems, reciprocal relationships between transportation systems and urban and regional development. (Spring—evening.)

**126 World Economies (3)** **Gassaway**

Basic principles of economic geography illustrated by reference to differing regional economies—pastoral, agricultural, industrial; patterns of world distribution. (Fall—day.)

**127 World Population and Settlement (3)** **Gassaway**

Population composition, structures, and distribution; characteristic world settlement patterns in terms of population organization. Assessment of factors contributing to population pressures, explosions and migrations, urban and rural settlement patterns and trends. (Spring—day)

**128 Economic Growth of Underdeveloped Areas (3)** **Westermann**

Definition of underdevelopment; locations of developing societies; nature and causes of retarded development; socioeconomic development planning; instruments and institutions for social, economic, and political development; foreign aid programs. (Fall—evening.)

**130 Economic Geography: Mediterranean Basin (3)** **Davis**

Description of differing regional economies and their relationships to the human and natural resources commanded by the region. Evaluation of economic problems and prospects for improvement. (Summer 1965.)

- 131 **Regional Development: Mediterranean Region (3)** Checchi,\* Clements,\* Chafkin\*  
A special course describing development concepts, implications, and projects; both public and private roles in regional development are discussed. (Summer 1965.)
- 133 **Regional Industrial Structures (3)** Westermann  
The nature of the industrial complex, types and distribution of industry, principles of industrial and economic development planning. (1966-67 and alternate years.)
- 134 **Location of Industry (3)** Westermann  
Structure and development of the major world industries, industrial location requirements, principles of industrial equilibrium. (1966-67 and alternate years.)
- 139 **European Economic Blocs (3)** Gassaway  
Principles of economic geography applied to the regional economies of Europe, European Economic Community, European Free Trade Association, and COMECON. (Spring—evening.)
- 141-42 **Urban Settlement (3-3)** Westermann  
Location, functions, and forms of cities; urban-rural relationships; the urban hierarchy; urban problems and the history of their development; the city of the future. (1965-66 and alternate years: academic year—day.)
- 145 **Psychological Geography (3)** Campbell  
A study of differences in national character structures, modal behavior patterns and personality traits typical of various cultures, difficulties these differences present in interpersonal relations and intercultural communications. (Spring—day.)
- 146 **World Political Geography (3)** Van Valkenburg  
Types and distributions of political systems, the major political units and associations of the world, factors which affect relative political power, areas of conflict and arbitration. (Fall—day.)
- 147 **Political Geography: Mediterranean Basin (3)**  
Characteristics of political systems and entities. Factors which affect relative political power, areas of conflict, and arbitration; political and other associations with non-Mediterranean areas. (Summer 1965.)
- 151 **United States † (3)** Davis  
(Not offered 1965-66.)
- 153 **Western Europe † (3)** Van Valkenburg  
(Not offered 1965-66.)
- 154 **The Mediterranean: Geography of Mediterranean Lands † (3)** Van Valkenburg  
A regional survey of Mediterranean Europe with special reference to the Iberian Peninsula (Spain and Portugal), Italy, and Greece. Emphasis on the impact of man on the physical environment. (Summer 1965.)
- 155 **Africa † (3)** Gassaway  
(Fall—day.)
- 156 **The Middle East † (3)** Van Valkenburg  
(Spring—day.)

\* Appointment for summer 1965.

† Regional Survey. No prerequisites. For students particularly interested in the study of specific regions, regional courses in the departments of Economics, History, and Political Science are strongly recommended, for example: Economics 185-86, *Economic History and Problems of Latin America*, History 164, *South America since Independence*, and Political Science 177, *Recent Trends in Latin American Politics and Government*.

- 161 **Latin America \*** (3) Westermann  
(Spring—day.)
- 164 **Communist China \*** (3) Davis  
(Not offered 1965–66.)
- 165 **Eastern and Southeastern Asia \*** (3)  
(Not offered 1965–66.)
- 166 **The Soviet Union \*** (3) Gassaway  
(1966–67 and alternate years.)
- 169 **Field Trip: Southern Europe \*** (6) Van Valkenburg  
Five weeks of lectures and travel in Southern Europe illustrating the inheritance of the past, the problems of the present, and the potential for the future. Countries included in the 1965 field trip are: France, Spain, Portugal, Morocco, and Switzerland. Prerequisite: Geography 154 or the equivalent. (Summer 1965.)
- 172 **Historical Geography: the Mediterranean Basin** (3) Van Valkenburg  
The Mediterranean Basin as a geographic unit during the course of history. Its economic and political importance in ancient times (Phoenicia, Greece, and Palestine), during the Roman Empire, the Middle Ages, and the Renaissance. Development from the Napoleonic Period to the present time. (Summer 1965.)
- 173–74 **City Planning** (3–3) Davis  
Optimum designs for future cities, theory and techniques of planning, action and implementation, information systems for city planning, methods of analysis of urban data, the design of proposed urban development and renewal. (1966–67 and alternate years.)
- 175–76 **Regional Planning** (3–3) Campbell  
Regional systems and subsystems, regional structures and functions, regional analysis, regional information systems, methods of economic and social planning, design of plans, government and implementation. (Not offered 1965–66.)
- 179–80 **Readings in Urban and Regional Development** (1–1) Davis  
(Academic year—as arranged.)
- 189–90 **Readings in Geography** (1–1) Gassaway  
(Academic year—as arranged.)
- 199–200 **Theory of Regions** (3–3)  
Area synthesis; comparison of the constructs region, system, and field; delineation, measurement, and analysis. (Not offered 1965–66.)
- 201–2 **Seminar: History and Philosophy of Geography** (3–3) *Third Group†*  
A year course: credit is not given for the first half until the second half is completed. A study of the development of geographic thought and an attempt to develop a useful, contemporary philosophy of geography. (1966–67 and alternate years.)
- 205–6 **Area Data Collection and Analysis** (3–3) Davis  
A year course: credit is not given for the first half until the second half is completed. Lecture (1 hour), laboratory and field (3 hours). Sources of regional information, methods and systems of data collection, quantitative and qualitative methods of analysis, systems of synthesis. (Academic year—evenings.)

\* See (†) footnote on page 214.

† Senior major or graduate status is required in all third-group courses.



- 233-34 **Seminar: Regional and Urban Planning (3-3)** Westermann  
A year course: credit is not given for the first half until the second half is completed. Analysis of the planning function, major problems confronting the planner, contemporary status of planning—its areas of success and failure. (1966-67 and alternate years: academic year—evening.)
- 241-42 **Seminar: Place and Culture (3-3)** Campbell  
A study of the culture traits which characterize various ethnic groups and differentiate people-place associations. (*First half: not offered 1965-66. Second half: spring—evening.*)
- 253-54 **Seminar: Problems of Developing Nations (3-3)** Chafkin \*  
Traditional societies and their disruption; modernization, social change, and economic development; problems of urban and regional planning; foreign aid programs. (Academic year—evening; summer 1965—Geography 253 Topic: Circum-Mediterranean Countries of Southern Europe and North Africa (3) (Davis).)
- 265 **Seminar: Geography of the Soviet Union (3)** Petrov  
A detailed study of the area, including physical features, economic geography, natural and energy resources, and industries. A discussion of the latest Soviet projects, of the Soviet transportation system, of agriculture, and of multinational population trends, with emphasis on population patterns along borderlands, especially the Sino-Soviet border. (Fall—evening.)
- 266 **Seminar: Geography of China (3)** Petrov  
A study of the physical and economic geography of the country, including discussion of China's emerging industries, energy resources, transportation system. Special emphasis will be given to the population "explosion"—its distribution and significance. Emphasis also on regional geography, particularly on regions along the Sino-Soviet border, Manchuria, Tibet, Mongolia, Inner Mongolia, and Sinkiang. (Spring—evening.)
- 295-96 **Research (3-3)** The Staff  
(Academic year—as arranged.)
- 299-300 **Thesis (3-3)** The Staff

#### COURSES OFFERED IN SPECIAL PROGRAM

In addition to the regular courses announced above, the University offers the following courses for students undertaking work toward the degree of Bachelor of Science in Geodetic and Cartographic Science, which is administered by the College of General Studies. For information concerning the degree see the brochure on the subject.

##### GEOGRAPHY

- 51 *Introduction to Geography (3)*
- 52 *World Regions (3)*
- 115-16 *Physical Geography (3-3)*
- 124 *Land Capabilities (3)*
- 125 *Transportation Complexes (3)*

##### GEODETIC AND CARTOGRAPHIC SCIENCE

- 1 *Map Reading and Photointerpretation (3)*
- 11 *Elementary Cartography (2)*
- 12 *Plane Surveying (3)*
- 13 *Higher Surveying (3)*

\* Appointment effective September 1965.

#### 216 GEOGRAPHY AND REGIONAL SCIENCE

- 17-18 *Elementary Photogrammetry* (3-3)  
 110 *Map Projections* (2)  
 111 *Cartographic Techniques and Map Reproduction* (2)  
 155 *Elementary Geodesy* (3)  
 156 *Geodetic Astronomy* (3)  
 160 *Theory of Errors and Geodetic Adjustments* (3)  
 197-98 *Proseminar in Geodesy, Photogrammetry, and Cartography* (3-3)

#### OCEANOGRAPHY

- 101-2 *Introductory Oceanography* (3-3)  
 109 *Tides* (3)

### Geology\*

*Professor Geza Teleki (Chairman)*

*Professorial Lecturers* Michael Fleischer, H. T. Evans, Jr., I. G. Sohn,  
 Nicholas Hotton

*Associate Professors* G. V. Carroll, J. W. Pierce, L. B. Platt

*Associate Professorial Lecturers* Daniel Appleman, J. T. Dutro, Jr.,  
 E. G. Kauffman, W. E. Maloney, P. M. Kier

*Instructors (part-time)* Frederick Collier, D. H. Massie

*Bachelor of Arts or Bachelor of Science with a major in Geology (Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, page 57. The following first-group courses must be included: Geology 1-2, 12; Chemistry 11-12; Physics 1-2; Mathematics 21 (for the degree of Bachelor of Arts), Mathematics 22, 23, and Physics 51-52 (for the degree of Bachelor of Science).

Required: in addition to the general requirements, pages 63-67, twenty-four semester hours in Geology beyond first-group courses for the Bachelor of Arts degree; thirty, for the Bachelor of Science degree. The work of the junior and senior years must be approved by the Department. Two foreign languages are recommended for students planning to do graduate work. Philosophy 121-22 is recommended as a senior-year elective.

*Master of Arts or Master of Science in the field of Geology.*—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Geology from this University, or the equivalent.

Required: the general requirements, pages 69-71, including Mathematics 22 and 23 or the equivalent. Candidates must pass the Master's Examination (page 71) before registration for the second half of the thesis work. A reading knowledge examination in French, German, or Russian must be passed before the second half of the work is started.

*Master of Science in the field of Geochemistry (an interdepartmental degree offered by the departments of Geology and Chemistry).*—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Chemistry or in Geology from this University, or the equivalent. Before admission to Master's candidacy, the student with an undergraduate major in Geology must demonstrate by credit or examination a knowledge of the content of Chemistry 21, 111, 112; Mathematics 22, 23; Physics 51-52.

Required: the general requirements, pages 69-71, including Chemistry 213, Geology 141, 241, 249-50. All prospective Master's candidates must take qualifying examinations in the fields of analytical and physical chemis-

\* Staff of Instruction for the academic year 1964-65

try, marine geology—and sedimentation or petrology before the second half of the program is started. The Master's Examination (page 71) must be taken before registration for the second half of the thesis work. With permission of the interdepartmental committee on geochemistry the German language may be replaced by Russian.

*Doctor of Philosophy.*—See pages 75–84.

**First Group 1–2 Introductory Geology (3–3)**

The Staff

Lecture (2 hours), laboratory and field trip (2½ hours). A survey course covering the principles of geology. Laboratory fee, \$10 a semester. (Academic year—day; summer 1965.)

**12 Rocks, Fossils, and Minerals (3)**

Carroll

Lecture (2 hours), laboratory (3 hours). Introduction to rocks, fossils, minerals, ores, gems, and other mineral deposits. Prerequisite: Geology 1 and high school chemistry, or permission of the instructor. Laboratory fee, \$10. (Spring—day.)

**Second Group 101 History of Geological Sciences (2)**

Teleki

Lectures on the development of geological thought and the history of geological and related sciences. (1966–67 and alternate years.)

**103 Development of Scientific Thought (3)**

Teleki

(Not offered 1965–66.)

**107 Dynamic Geology (3)**

The Staff

Lecture (2 hours), laboratory and field trips as arranged. The interrelation of endogene and exogene forces in the processes of sedimentation and vulcanism; geochemical and geophysical aspects of epicontinental and geosynclinal areas. Prerequisite: Geology 1. (Fall—day.)

**111–12 Mineralogy (4–4)**

Carroll

A year course: credit is not given for the first half until the second half has been completed (except for chemistry majors who may receive credit for the first half only). Lecture (2 hours), laboratory (4 hours). *First half:* morphological crystallography and elementary aspects of optical crystallography with their application to the identification of minerals. *Second half:* optical mineralogy; identification of nonopaque minerals by use of the polarizing microscope. Prerequisite: Geology 1–2. Laboratory fee, \$10 a semester. (Academic year—day.)

**115 Petrography (4)**

Carroll

Lecture (2 hours), laboratory (4 hours). Megascopic and microscopic identification and classification of common rocks. Prerequisite: Chemistry 11–12; Geology 111–12. Laboratory fee, \$10. (Fall—day.)

**117 Introduction to Petrology (3)**

Carroll

Lecture (2 hours), laboratory (3 hours). Lectures on petrogenic theory with emphasis on igneous and metamorphic rocks; laboratory work on the diagnosis of rock genesis by polarizing microscopic determination of mineralogical and textural characteristics. Prerequisite: Geology 115. Laboratory fee, \$10. (Fall—day.)

**122 Structural Geology (3)**

Platt

Lecture (2 hours), laboratory and field trips as arranged. Genetic interpretation of geologic formations on the basis of their structures, with emphasis on applications to geological field work. Prerequisite: Geology 1–2. (Fall—day.)



- 123 **Tectonics (3)** Platt  
Lecture (1 hour), laboratory (4 hours). Introduction to specialized techniques of structural analysis, and to tectonic theory. Prerequisite: Geology 122. (Spring—evening.)
- 125 **Marine Geology (3)** Pierce  
Lecture and map work. Principles of oceanography and submarine geology; geology of the deep sea; topography, crustal structure, sedimentary processes, and marine environment. Prerequisite for geology majors: Geology 1-2; for students in fields other than geology, permission of the instructor. (Fall—day.)
- 128 **Geomorphology (4)** Teleki  
Lecture (2 hours), laboratory (2 hours), field trips as arranged. Nature and evolution of earth forms, interpretation of maps and aerial photographs. Prerequisite: Geology 107. (Spring—day.)
- 130 **Photointerpretation (4)** Pierce, Teleki  
Lecture (2 hours), laboratory (3 hours). Principles of photogrammetry, interpretation of geographical and geological features on aerial photographs, evaluation of data with stereoscopic methods. Laboratory fee, \$10. (Spring—day.)
- 141 **Geochemistry (3)**  
Principles and theories on the abundance, relationships, and the distribution in the various rock and mineral species. (Fall—day.)
- 151-52 **Invertebrate Paleontology (3-3)** Kauffman  
Lecture (2 hours), laboratory (3 hours), field trips as arranged. Classification and evolution of fossil invertebrates, paleoecology of invertebrate organisms. Prerequisite: Geology 1-2. Laboratory fee, \$10 a semester. (Academic year—evening.)
- 154 **Vertebrate Paleontology (3)** Hotton  
Lecture (2 hours), laboratory or field as arranged. General features of vertebrate morphology and evolution as illustrated by the fossil record; problems of paleoecology and adaptation, where appropriate. (Spring—evening.)
- 157 **Methods in Paleontology (3)** Sohn  
An introduction to the principles and techniques of paleontological research, including the rules of zoological nomenclature. Prerequisite: Geology 151-52. (Fall—evening.)
- 163 **Sedimentation (4)** Pierce  
Lecture (2 hours), laboratory (4 hours). Principles of sedimentation, analysis and interpretation of sedimentary processes and environment, laboratory experiments in the properties of sedimentary particles. Prerequisite: Geology 107. Laboratory fee, \$15. (Fall—day.)
- 166 **Stratigraphy (4)** Pierce  
Lecture (2 hours), laboratory (4 hours). Sedimentation, facies, evaluation of stratigraphic boundaries, principles of correlation, applied stratigraphic geology. Prerequisite: Geology 107, 163. (Spring—day.)
- 173 **Regional Geology (3)** The Staff  
Lecture (3 hours), recitation (1 hour). Lecture and map work on the regional distribution of geological formations and structures. This course may be reelected for credit. Prerequisite: Geology 107, 122, or permission of the instructor. (Spring—day.)
- 181 **Oceanography I (3)** Maloney  
Chemical and physical properties of sea water, movements of water masses, meteorological interrelations, ecology of marine plants and animals. Prerequisite: Chemistry 11-12, Physics 51-52. (Fall—evening.)

- 182 **Oceanography II (3)** Maloney  
Boundary processes and interactions between sea water and the atmosphere, principles of dynamics and their application to motion and distribution of variables, acoustics of water masses, review of recent literature and problems. Prerequisite: Geology 181. (Spring—evening.)
- 191 **Laboratory Techniques I (2)** Massie  
Lecture (1 hour), laboratory (2 hours). An introduction to photographic procedures and techniques. Laboratory fee, \$15. This course may be repeated for credit with the approval of the Department. (Fall and spring—Saturday morning.)
- 192 **Laboratory Techniques II (2)** Collier  
Lecture (1 hour), laboratory (3 hours). An introduction to laboratory machinery and techniques, preparation of thin sections, grinding and polishing techniques, fossil preparation, organization and handling of collections. Laboratory fee, \$15. This course may be repeated for credit, with the approval of the Department. (Fall—Saturday morning.)

- Third Group* 202 **Geometrics (3)** Pierce  
Lecture (2 hours), laboratory (as arranged). Application of statistics to geological and paleontological problems, quantitative and mathematical approach. Prerequisite: Mathematics 23 or permission of the instructor. Laboratory fee, \$10. (Spring—day.)
- 205-6 **Seminar in Geology (3-3)** The Staff  
Special topics. Does not repeat itself and may be elected in successive years. (Academic year—as arranged.)
- 211 **X-ray Crystallography (3)**  
The structure of crystals as determined by the X-ray method. (1966-67 and alternate years.)
- 212 **Crystal Chemistry \* (3)** Evans  
Chemistry of the solid state. Bonding and coordination and the role of crystalline structure in chemistry and mineralogy. (1966-67 and alternate years.)
- 216 **Sedimentary Petrography (4)** Pierce  
Lecture (2 hours), laboratory (4 hours). The mineralogy and chemistry of sediments and sedimentary rocks; identification, description, and classification of sedimentary rocks with megascopic and microscopic methods. Prerequisite: Chemistry 11-12; Geology 111-12, 163. Laboratory fee, \$10. (Spring—day.)
- 227 **Coastal Morphology (3)** Teleki  
Lecture (2 hours), laboratory (2 hours). Morphological analysis of the features and processes of coastal zones. Survey of the coastal-zone types of the world. Prerequisite: Geology 128. (Fall—day.)
- 241 **Geochemistry \* (3)** The Staff  
Lecture (2 hours), laboratory (as arranged). Chemical composition and physical properties of sea water, chemical composition of marine sediments and their alterations, thermodynamics of sea water, biochemical activity in the oceans, methods of analysis and problems of measuring. Prerequisite: Geology 141. Laboratory fee, \$18. (Spring—evening.)
- 242 **Experimental Geochemistry (3)** The Staff  
Recent advances in geochemistry, instrumental methods and their applica-

\* Prerequisite: an adequate background in physics and chemistry, to be determined in conference with the instructor.

tion. Special topics. Does not repeat itself and can be re-elected for credit. Prerequisite: Chemistry 111, 112; Geology 141. (Spring—evening.)

- 249-50 **Seminar: Geochemistry (2-2)** The Staff  
Independent topics each semester. Can be elected for either semester. Does not repeat itself and can be re-elected for credit. (Academic year—as arranged.)
- 251-52 **Micropaleontology (4-4)** Sohn  
Lecture (2 hours), laboratory (as arranged). Identification with binocular microscope of Ostracoda and other fossil microorganisms. Micropaleontological techniques, paleontological research methods, taxonomy, and paleoecology. Age determination and correlation of stratigraphic units. Laboratory fee, \$12 a semester. (1966-67 and alternate years.)
- 257-58 **Seminar: Paleontology and Paleoecology (3-3)** The Staff  
Independent topics each semester. Can be elected for either semester. Does not repeat itself and can be re-elected for credit. (Academic year—as arranged.)
- 267-68 **Seminar: Stratigraphy (3-3)** The Staff  
Independent topics each semester. Can be elected for either semester. Does not repeat itself and can be re-elected for credit. (Academic year—as arranged.)
- 295-96 **Research (arr.)** The Staff  
Research on problems approved by the Staff. Open to qualified students with advanced training. Laboratory fee, \$6 a semester hour. (Academic year—as arranged.)
- 299-300 **Thesis (3-3)** The Staff  
(Academic year—as arranged.)

## Germanic Languages and Literatures\*

*Professor W. K. Legner (Chairman)*

*Associate Professors J. C. King, Klaus Thoenelt, H. D. Osterle*

*Instructor Carl Steiner*

*Bachelor of Arts with a major in Germanic Languages and Literatures (Departmental).—Prerequisite: the Arts and Letters curriculum, page 57, including German 9-10 and 51-52.*

Required: in addition to the general requirements, pages 63-67, a minimum of twenty semester hours in German courses above the first group, including German 179-80; reasonable proficiency in speaking and writing German; History 39-40 or the equivalent; six semester hours in Philosophy selected with the approval of the adviser. Majors in German are strongly advised to study French.

*Master of Arts in Germanic Languages and Literatures.—Prerequisite: a Bachelor of Arts degree with a major in Germanic Languages and Literatures from this University, or the equivalent.*

Required: the general requirements, pages 69-71, including a reading knowledge of French and a thesis in the field of German literature or linguistics.

*Master of Arts in the field of Linguistics (an interdepartmental degree offered by the departments of Germanic Languages and Literatures and Romance Languages and Literatures).—Prerequisite: a Bachelor of Arts*

\* Staff of Instruction for the academic year 1964-65.



degree, preferably with a major in French, German, Russian, or Spanish at this University, or the equivalent, and the approval of candidacy by the Committee on Linguistic Study.

Required: the general requirements, pages 69-71, including a thesis and twenty-four semester hours of second-group courses selected in consultation with the chairman of the department directing the Master's program and approved by the Committee on Linguistic Study. The candidate's program will normally be selected from courses in Anthropology, English, French, General Courses in Romance Languages and Literatures, German, Mathematics, Philosophy, Psychology, Russian, Spanish, Speech, and Statistics listed on pages 258-59.

*Doctor of Philosophy.*—See pages 75-84.

*Bachelor of Arts in Education with a teaching field in German.*—Prerequisite: the Education curriculum, page 59.

Required: the German option and the professional courses listed on page 99.

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|---------------------|--------|---|-----------|
| <i>First Group</i>  | 1-2    | <b>First-year German (3-3)</b>  | The Staff |
|                     |        | A year course: credit is not given for the first half until the second half is completed. The essentials of German grammar; translation of easy prose. Three classroom periods a week plus one period of aural-oral practice in electronic language workshop. Workshop fee, \$6 a semester. (First half: fall—day and evening; spring—day; summer 1965. Second half: fall—day; spring—day and evening; summer 1965.)  |           |
|                     | 3-4    | <b>Second-year German * (3-3)</b>   | The Staff |
|                     |        | A year course: credit is not given for the first half until the second half is completed. Selections from modern German prose; continuation and review of grammar. Three classroom periods a week plus one period of aural-oral practice in electronic language workshop. Workshop fee, \$6 a semester. Prerequisite: German 1-2 or two years of high school German. (First half: fall—day and evening; spring—day; summer 1965. Second half: fall—day; spring—day and evening; summer—1965.) |           |
|                     | 9-10   | <b>German Conversation and Composition * (3-3)</b>  | Steiner   |
|                     |        | (Academic year—day; summer 1965.)   |           |
|                     | 47     | <b>Beginning German for Reading Examination Candidates (0)</b>  | The Staff |
|                     |        | Specifically for graduate students with little or no German, who are preparing for reading examinations. No academic credit. Tuition fee, \$138. (Fall and spring—evening; summer 1965.)  |           |
|                     | 49     | <b>German Readings for Nonmajor Students (3)</b>  | The Staff |
|                     |        | Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students. Prerequisite: German 4 or 47, or the equivalent. (Fall and spring—evening; summer 1965.)   |           |
|                     | 51-52  | <b>Introduction to German Literature * (3-3)</b>  | Thoenelt  |
|                     |        | Prerequisite: German 4 or the equivalent. (Academic year—day.)  |           |
| <i>Second Group</i> | 103-4  | <b>Goethe's "Faust"—Parts I and II (3-3)</b>  | Legner    |
|                     |        | (1966-67 and alternate years.)  |           |
|                     | 131-32 | <b>German Literature of the 18th Century (3-3)</b>  | Thoenelt  |
|                     |        | The age of Lessing, Goethe, and Schiller. (1965-66 and alternate years: academic year—day.)   |           |

\* With the permission of the instructor, German 9-10 or 51-52 may be undertaken concurrently with German 4.

- |        |   |                          |                    |
|--------|---|--------------------------|--------------------|
| 141-42 | <b>German Literature of the 19th Century (3-3)</b><br>Romanticism, Biedermeier period, Young Germany, Realism.<br>and alternate years: academic year—evening.)  | King<br>(1965-66)        |                    |
| 151-52 | <b>German Literature of the 20th Century (3-3)</b><br>(1966-67 and alternate years.)  |                          |                    |
| 179-80 | <b>Advanced Composition for Undergraduate and Graduate Majors (1-1)</b><br>(Academic year—as arranged.)   | King, Legner             |                    |
| 201-2  | <b>Middle High German (3-3)</b><br>(1965-66 and alternate years: academic year—evening.)  | King, Legner             | <i>Third Group</i> |
| 205-6  | <b>Gothic (3-3)</b><br>Introduction to the comparative study of Germanic languages.<br>and alternate years.)  | Legner<br>(1966-67)      |                    |
| 209-10 | <b>Old High German (3-3)</b><br>(1966-67 and alternate years.)  | King                     |                    |
| 213-14 | <b>Old Norse (3-3)</b><br>(1965-66 and alternate years: academic year—evening.)   | Allee                    |                    |
| 223-24 | <b>Linguistic Analysis of Modern German (3-3)</b><br>Treatment of phonetics, phonemics, morphology, and syntax.<br>and every third year.)   | King<br>(1966-67)        |                    |
| 225-26 | <b>Seminar: Linguistics (3-3)</b><br>Bibliography, methodology, readings, and research problems.<br>and every third year: academic year—evening.)   | King, Allee<br>(1965-66) |                    |
| 227-28 | <b>Sanskrit—Introduction to Indo-European Linguistics (3-3)</b><br>Old Indic language and literature. (1966-67 and alternate years.)  | King                     |                    |
| 229    | <b>German Literature of the 15th and 16th Centuries (3)</b><br>Transition from chivalric to bourgeois literature. The eras of Humanism<br>and the Reformation as reflected in the principal literary works. (Not<br>offered 1965-66.) | Legner                   |                    |
| 230    | <b>German Literature of the 17th Century (3)</b><br>Imitation of foreign models. The literary societies. Preciosity. The begin-<br>nings of realism in the novel. Pietism. (Not offered 1965-66.)                                     | Legner                   |                    |
| 231-32 | <b>German Classicism (3-3)</b><br>An advanced study and critique of the literature of the Goethezeit. Pre-<br>requisite: German 131-32 or the equivalent. (1966-67 and alternate<br>years.)   | Thoenelt                 |                    |
| 241-42 | <b>Seminar: German Romanticism (3-3)</b><br>Treatment of individual writers, groups, motifs, and tendencies. (1966-<br>67 and alternate years.)   | Thoenelt                 |                    |
| 251-52 | <b>Seminar: Studies in 20th Century German Literature (3-3)</b><br>Special projects in fiction, drama, poetry, and criticism. (1965-66 and<br>alternate years: academic year—evening.)  |                          |                    |
| 261-62 | <b>German-English and German-American Literary Relations (3-3)</b><br>Influence of individual writers, with emphasis on Shakespeare and Goethe.   |                          |                    |

- Comparative studies of major genres. Sociology of literature. (Not offered 1965-66.)
- 263-64 **Evolution of the French and the German Novel from the 17th to the 20th Century (3-3)** Thoenelt  
Influences, analogies, and contrasts. Motif and style studies. (Not offered 1965-66.)
- 271-72 **Seminar: German Literature (3-3)** The Staff  
Bibliography, methodology, readings, and research problems. (Not offered 1965-66.)
- 299-300 **Thesis (3-3)** The Staff  
Required of all candidates for the Master's degree in German. (Academic year—as arranged.)

## Government and Business\*

*Professors* R. D. Kennedy (*Emeritus*), J. L. Jessup, J. C. Dockeray (*Chairman*), D. S. Brown, A. M. Woodruff (until February 1, 1965), F. H. Gibbs, G. C. Jacobus, R. B. Eastin, R. F. Ericson, G. L. Lippitt, Edwin Lewis, Waldo Sommers, K. E. Stromsem, Leon Gintzig, C. E. Bradley (*Research*)

*Professorial Lecturers* S. N. Alexander, C. G. Berns, J. L. Buckler, C. W. Clewlow, L. C. Collins, Frank Higginbotham, C. E. Houston, Robert Kaye, J. L. Krieger, K. F. McClure, Edward McCrensky, J. P. Murphy, F. I. Shaffner, Clark Simpson, I. E. Steele, J. N. Stonesifer, Clark Tibbitts, W. G. Torpey, C. E. Goode, M. H. Schwartz, Tom Kouzes, C. U. Letourneau, Ben Posner

*Associate Professors* F. C. Kurtz, D. R. Cloutier, J. G. Brown, E. W. Camp, J. W. Coughlan, C. M. Mickey, J. H. Walters, Jr., J. F. McCarthy, Jr., P. R. Huntley

*Associate Professorial Lecturers* C. M. Campbell, O. C. Disler, J. F. Doubleday, Samuel Humes, George Idelson, V. B. Lewis, J. A. Morrow, Ross Pollock, John Provan, P. C. Tosini, W. W. Brownholtz, E. E. Pontius, Jerome Bracken, Norman Beckman

*Assistant Professors* H. R. Page, G. F. Conner, M. G. Gallagher, D. M. Cook, P. D. Grub, Rosemary Capusan, R. A. Barrett, Chei-Min Paik, W. E. McConville

*Assistant Professorial Lecturers* R. J. Bond, C. J. Brinkman, F. X. McKenna, J. F. Regan, D. E. Russell, L. E. This, J. E. Daly, Jr., Richard Foster, Aladino Gavazzi, O. B. Martinson, R. W. Perkins, J. A. Schaffer, Marjorie Quandt

*Instructor* J. R. Roman, Jr.

*Instructors (part-time)* Charles Eskew, M. M. Dietch, Jr.

*Associate in Arts (two-year terminal curriculum in Accounting).*—For curriculum see page 62.

*Bachelor of Arts in Government in the field of Public Affairs.*—See pages 113-15 and 122-23.

*Bachelor of Business Administration with a major in Accounting or Business Administration.*—See pages 113-21.

\* Staff of Instruction for the academic year 1964-65.



*Master of Arts in Government in the fields of Public Administration, Public Affairs, or Personnel Administration.*—See pages 123–26 and 131–34.

*Master of Business Administration in the fields of Accounting, Business Administration, Health Care Administration, or Personnel Administration.*—See pages 123–30.

*Master of Public Administration in the fields of Public Administration, Health Care Administration, or Personnel Administration.*—See pages 123–26 and 130–31.

*Graduate Certificate in Health Care Administration.*—See pages 134–35.

*Doctor of Business Administration or Doctor of Public Administration.*—See pages 136–37.

*Bachelor of Arts in Education with teaching fields in Business Education.*—Prerequisite: the Education curriculum, page 59.

Required: the Business Education option and the professional courses listed on page 99.

## ACCOUNTING

### 1-2 Introductory Accounting (3-3)

The Staff *First Group*

*First half:* basic principles underlying accounting records, preparation of the work sheet and financial statements, accounting for single proprietorships and partnerships. *Second half:* accounting for corporations and introduction to cost accounting, analysis of financial statements, and valuation and amortization problems. Prerequisite to Accounting 2: Accounting 1 or permission of the instructor. (*First half:* fall and spring—day and evening; summer 1965. *Second half:* fall and spring—day and evening; summer 1965.)

### 101 Cost Accounting (3)

Paik *Second Group*

Theory and purposes of industrial cost accounting; treatment of systems of cost control and determination; analysis and interpretation of cost data; job, process, and standard cost systems. Prerequisite: Accounting 1-2. (Fall—day and evening; spring—day; summer 1965.)

### 111 Financial Statement Analysis (3)

Kennedy, Steele

Methods and techniques of preparing, analyzing, and interpreting financial statements for the guidance of operating executives, directors, stockholders, and creditors; influence of price level changes on accounting data, determination and interpretation of trends and ratios. Prerequisite: Accounting 1-2 or permission of the instructor. (Fall—day; spring—evening.)

### 115 Survey of Accounting (3)

Gallagher, Paik

An introduction to the basic principles underlying financial statements and records with emphasis on the use of accounting information in the management process. Study of theory, terminology, cost accounting, and interpretation of financial data. Not open for credit to Accounting majors. (Fall and spring—evening; summer 1965.)

### 121-22 Intermediate Accounting (3-3)

Kurtz, Simpson

*First half:* valuation and amortization problems of current assets, long-term investments, tangible fixed assets, intangible assets, and deferred charges; accounting for current, noncurrent, contingent, and estimated liabilities. Prerequisite to 121: Accounting 2 or permission of the instructor. *Second half:* accounting for the organization, financing, operation, and dissolution of corporations and partnerships, basic principles of consignment and installment sales. Prerequisite to 122: Accounting 121 or permission of the instructor. (Academic year—day and evening; summer 1965.)

### 132 Accounting Theory (3)

Kennedy

Development of basic accounting principles and concepts with a review of some of the major contributions to accounting literature and with special reference to current thought as reflected in the pronouncements of the

American Institute of Certified Public Accountants and the American Accounting Association. Prerequisite: 6 hours of accounting. (Spring—day.)

- 141 **Governmental Accounting (3)** Lewis  
Problems relating to governmental appropriation accounts, encumbrances, and fund accounting. Emphasis on municipal and state government accounting with an introduction to federal accounting. Prerequisite: Accounting 1-2 or permission of the instructor. (Fall—evening.)
- 144 **Federal Accounting (3)** Lewis  
Accounting procedures in the Federal Government, with emphasis on agency level accounts, implementation of accrued expenditure legislation, and accounting support for cost-based budgets. Accounts of United States Treasury; current concepts of allotment, obligation, and disbursement accounting and reporting. Prerequisite: Accounting 141 or permission of the instructor. (Spring—evening.)
- 161 **Income Tax Accounting (3)** Gallagher  
Problems involved in the federal income taxation of individuals and corporations, differences between tax accounting and financial accounting, social security taxes. Prerequisite: Accounting 1-2. (Fall—day and evening.)
- 162 **Federal Tax Practice (3)** Gallagher  
Advanced problems of federal tax practice such as the tax treatment of partnerships, estates, trusts, corporate reorganizations, foreign income, and gifts; use of the tax services; assessment, collection, and refund procedures. Prerequisite: Accounting 161 or permission of the instructor. (Spring—evening.)
- 171 **Auditing (3)** Kurtz  
Duties and responsibilities of auditors: principles and procedures of making audits, techniques of verifying each financial statement item, preparation of audit working papers and reports. Prerequisite: Accounting 121-22. (Fall—evening.)
- 172 **Auditing Practice (3)** Kurtz  
A critical study of the standards of audit reporting; an advanced study of certain auditing procedural problems; and a study of current auditing topics to include the application of statistical sampling techniques to auditing, auditing electronic systems, and management advisory services. Prerequisite: Accounting 171 or permission of the instructor. (Spring—evening.)
- 181 **Accounting Systems (3)** Lewis  
Theory and procedure of designing and installing accounting systems for collecting, recording, analyzing, and presenting accounting data. Prerequisite: Accounting 101, 121-22, and 171, or permission of the instructor. (Fall—evening.)
- 191 **Advanced Accounting (3)** Coughlan, Paik  
Consolidated statements, statement of affairs, realization and liquidation reports, and estate and trust accounting. Prerequisite: Accounting 121-22. (Fall—evening.)
- 193 **Business Budgeting (3)** Lewis, Buckler  
Principles, techniques, and procedures involved in the development, installation, and operation of a system of budgetary control to aid in the management of commercial and industrial organizations. Prerequisite: Accounting 1-2. (Fall—day; spring—day and evening; summer 1965.)
- 196 **Management Decisions and Accounting (3)** Coughlan, Lewis  
An analysis of the information required by management in making capital budgeting, inventory management, and other decisions, and an investigation of the past and prospective ability of the accountant to provide that infor-



mation. Consideration will be given to the cash-flow and probability data needed by modern management and to advanced cost accounting systems. Prerequisite: Accounting 1-2. (Not offered 1965-66.)

198 **Professional Accounting Review (3)**

Lewis

Review and coordination of the principles and techniques developed in the accounting curriculum, in preparation for general practice in the field of accountancy and for professional accounting examinations. Prerequisite: Accounting 101, 141, 162, 171, and 191, or permission of the instructor. (Spring—evening.)

211-12 **Managerial Accounting (3-3)**

Kennedy, Higginbotham

*Third  
Group*

*First half:* analysis of the accounting system with special reference to the use of financial and operating records and accounting reports as tools of management; a study of valuation and amortization problems including the influence of price level changes on accounting data. Prerequisite: Accounting 1-2 or 115. *Second half:* a survey of internal accounting controls, commercial budgets, and cost accounting systems used by management in directing and controlling a business. Prerequisite to Accounting 212: Accounting 211 or permission of the instructor. (Not offered 1965-66.)

215 **Survey of Managerial Accounting (3)**

Coughlan, Paik

Nature, preparation, analysis, and interpretation of accounting reports, study of cost accounting, business budgeting, and internal accounting controls with emphasis on their use in the management process. Prerequisite: Accounting 1-2 or 115 or permission of the instructor. Not available for credit to students taking Accounting 211-12. (Fall and spring—evening.)

231 **Contemporary Accounting Theory (3)**

Coughlan

Advanced accounting principles and concepts and recent theories concerned with the valuation and amortization of assets and determination of income. Admission by permission of the instructor. (Fall—evening.)

241 **Accounting and Related Disciplines (3)**

Coughlan

A study of the relationship between accounting and such related disciplines as economics, statistical theory, and operations research with emphasis on what the accountant has to offer to these allied fields and to the new ideas and new requirements which these fields may offer to or impose upon accounting. Prerequisite: permission of the instructor. (Not offered 1965-66.)

246 **Governmental Accounting and Budgeting Problems (3)**

Lewis

Advanced principles and practices in federal accounting, relationship to general policy and administration. Prerequisite: Accounting 144 or permission of the instructor. (Not offered 1965-66.)

275 **Internal Control and Auditing (3)**

Coughlan, Kurtz

Internal accounting controls; review and appraisal of accounting systems, procedures, and managerial policies with respect to their effectiveness and profitability. Emphasis on the use of internal control and auditing as an aid to management. Prerequisite: Accounting 171 or permission of the instructor. (Not offered 1965-66.)

276 **Management Planning and Control (3)**

Paik

Theories and techniques of cost accounting and budgetary planning and control; study of problems arising from application of these theories and techniques to real-world management situations. Emphasized topics: the relation of planning and control systems to corporate and departmental objectives; control of decentralized organization, profit centers, and transfer pricing; control of discretionary costs; long-range planning and control. Prerequisite: Accounting 101 and Business Administration 102 or Business and Public Administration 201, or permission of the instructor. (Summer 1965.)



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|--------|--|-----------|
| 295-96 | <b>Seminar in Accounting (3-3)</b><br>Selected accounting research topics and problems; individual oral and written reports. Admission by permission of the instructor. (Academic year—evening.) | Kennedy   |
| 297-98 | <b>Accounting Reading and Research (3-3)</b><br>(Academic year—as arranged.)   | The Staff |
| 299    | <b>Thesis Seminar (3)</b><br>(Academic year—as arranged; summer 1965.)   | The Staff |
| 300    | <b>Thesis (3)</b><br>(Academic year—as arranged; summer 1965.)   | The Staff |

#### COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers the accounting courses listed below for students enrolled in the following special programs: Navy Graduate Financial Management Program, Air Force Advanced Management Program, and Engineering Administration.

- 115 *Survey of Accounting (3) (Summer 1965.)*
- 278 *Survey of Internal Control and Auditing (3)*
- 293 *Budget Preparation and Administration (3)*

#### BUSINESS ADMINISTRATION

- |                     |     |  |                    |
|---------------------|-----|--|--------------------|
| <i>Second Group</i> | 101 | <b>Introduction to Business (3)</b><br>The business environment; its effects upon the decision making process. (Fall—day and evening; spring—day; summer 1965.)  | Conner             |
|                     | 102 | <b>Fundamentals of Management (3)</b><br>Planning, organizing, directing, coordinating, and controlling the activities of the administrative unit, evolution of management thinking. (Fall and spring—day and evening; summer 1965.) | Ericson, Conner    |
|                     | 105 | <b>Personnel Management (3)</b><br>Industrial personnel and manpower programs, organizations and policy in personnel activities. (Fall—day; spring—evening; summer 1965.)  | Eastin, Stonesifer |
|                     | 106 | <b>Problems in Personnel Management (3)</b><br>Principles of manpower management illustrated by cases drawn from business, industry, and government. Prerequisite: Business Administration 105. (Spring—evening.)                    | Eastin, Stonesifer |
|                     | 107 | <b>Labor-Management Contracts (3)</b><br>Management's role in the negotiation and administration of collective bargaining agreements, as essential to development of good labor-management relations. (Not offered 1965-66.)         | Sommers            |
|                     | 109 | <b>Office Management (3)</b><br>Organization and layout of an office, use of office machines and appliances, planning and execution of work, supervision problems. (Fall and spring—evening.)  | Dietch             |
|                     | 113 | <b>Real Estate (3)</b><br>Fundamentals of real estate practice; leasing and property management, valuation, financing, and taxation. (Fall—evening.)   | Doubleday          |
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- 118 **Introduction to Data Processing (3)** McCarthy  
Basic principles and methods of data processing. An introduction to the fundamentals, potentials, and problems of automatic data processing for management information systems. (Fall—day.)
- 119 **Data Processing Programming (3)** McCarthy  
Basic principles and methods of computer programming. An introduction to the basic computer programming concepts, and the form and character of instructions and programming schema for the leading types of digital electronic computers. Prerequisite: Business Administration 118 or permission of the instructor. (Spring—evening.)
- 120 **Data Processing Systems (3)**  
Basic principles and methods of data systems analysis, design, and implementation. Emphasis is placed on relationship between equipment systems and management information systems. Prerequisite: Business Administration 118 or permission of the instructor. (Not offered 1965–66.)
- 121 **Property and Casualty Insurance (3)** Doubleday  
A general course in underlying principles of property, life, marine, and casualty insurance, and the function of insurance in the economic life of a business or individual. (Spring—evening.)
- 122 **Life Insurance and Estate Planning (3)** Campbell  
Life insurance contracts, their use in providing protection and estate development. (Spring—evening.)
- 131 **Business Finance (3)** Page, Roman  
Basic principles involved in the financing of business enterprises. Prerequisite: Accounting 1–2. (Fall—day; spring—day and evening; summer 1965.)
- 136 **Credit Management (3)**  
Types and sources of credit information, credit relationships from the standpoint of the commercial bank and the commercial business enterprise. Prerequisite: Accounting 1–2. (Spring—evening.)
- 138 **Investments (3)** Dockeray, Shaffner  
Analysis of factors of investment credit with application to different types of investments, proper selection of investments for various classes of investors, regulation. Prerequisite: Accounting 1–2, Business Administration 131. (Spring—evening; summer 1965.)
- 141 **Basic Marketing Management (3)** Walters  
An introduction to marketing and marketing management in relation to our total economy and business management, consumer and demand analysis, retailing, wholesaling, major marketing management problems and policies with particular emphasis on major decision areas and tools. Prerequisite: Economics 1–2. (Fall—evening; spring—day; summer 1965.)
- 142 **Marketing Management Problems (3)**  
Practical problems of retailers, wholesalers, and manufacturers considered through the use of cases and text material; fundamental considerations in marketing decisions and the nature of the problem-solving process. Prerequisite: Business Administration 141. (Not offered 1965–66.)
- 143 **Marketing Research (3)**  
Principles and practices of marketing research with particular emphasis upon basic methods and techniques, sources and interpretation of data, and presentation of results. (Fall—evening.)
- 145 **Sales Management (3)**  
Organization of the sales department, sales planning and forecasting, quotas, territories, performance standards, and analysis and control of distribution

costs. Prerequisite: Business Administration 141. (Fall—evening.)

- 147 **Advertising (3)** Idelson  
Advertising as a function of marketing and merchandising; uses and limitations of advertising as a tool of management; fundamentals involved in getting a finished advertisement before potential customers; evaluation, criticism, and control of advertising. (Fall—evening.)
- 150 **Procurement and Materials Management (3)**  
Purchasing organization, procedures, and policies; market relationships; selection of merchandise and sources of supply; procurement information and records; evaluation of procurement practices in industry and government. (Spring—evening.)
- 158 **Traffic Management (3)** Kaye  
Organization and records of traffic department, routing of shipments, services by carriers, rates and charges, relation of shipper to transportation agencies. (Spring—evening.)
- 161 **Commercial Law: Contracts, Sales, Agency, and Bailments (3)** Collins, McClure  
(Fall—day and evening.)
- 162 **Commercial Law: Negotiable Instruments, Property, Mortgages (3)** Collins, Murphy  
(Spring—day and evening.)
- 163 **Law in Relation to the Form of Business Units: Corporations, Partnerships, and Trusts (3)** Murphy  
(Fall—evening.)
- 171 **Principles of Transportation (3)** Roman  
Impact of transport on society; development, economic characteristics, services, rates, and regulation of the various modes of domestic intercity transportation. (Fall—evening.)
- 172 **Public Utilities (3)** Roman  
Legal and economic meaning of the public utility concept; development, services, economic characteristics, rate making, and regulation of the various utility industries, with particular emphasis on electric, gas, telephone, and urban transit industries. (Spring—evening.)
- 173 **Commercial Motor Transportation (3)** Roman  
Organization, management, services, economic characteristics, rates, and regulation of motor transport firms; highways and highway financing considered from the point of view of both producers and users of the services. (Not offered 1965-66.)
- 174 **Commercial Air Transportation (3)** Roman  
Organization, management, services, economic characteristics, rates, and regulation of air transport firms; policies and activities of the government in the development, promotion, and control of air transport (Not offered 1965-66.)
- 175 **Introduction to Foreign Trade (3)** Kaye  
Terminology, trade usages and practices, conditions essential to successful trading, economic bases of international trade, obstacles to trade, tariffs, impact of governmental controls on private trade. Prerequisite: Economics 1-2. (Fall and spring—evening.)
- 176 **Exporting and Importing (3)** Kaye  
Policy and operating problems of foreign trade, financing, documentation, packing and transportation of shipments, ocean marine insurance, and U. S. Customs procedure and formalities. (Spring—evening.)



- 177 **Foreign Markets (3)** Grub  
Patterns of World Trade by countries and commodities. Methods of preparing foreign market surveys, selected regional analyses. Prerequisite: Economics 1-2 and Business Administration 141. (Fall—evening.)
- 178 **Management of International Business Operations (3)** Grub  
Analysis of overseas projects according to purpose and type of organization; case studies involving development and management of overseas marketing programs and other operations in different areas of the world. (Spring—evening.)
- 181 **Manufacturing Production (3)** Page  
Basic principles and methods of manufacturing production. Manufacturing facilities, plant and equipment. Illustrations selected from various process and fabrication industries. (Spring—evening.)
- 191 **Business Reports and Analyses (3)** J. Brown  
Sources of management information, array and analysis of data, interpretation and presentation of the findings. (Fall—evening.)
- 193 **Management Communication (3)** Eastin, J. Brown  
A survey course in the problems of communication; written communication; style and format; oral communication; oral briefing and presentation; group leadership; rapid reading; completed staff work; and related subjects. (Fall—evening; spring—day.)
- 195 **Controllership (3)** Regan  
The duties, responsibilities, and place of the controller in a business organization; relations of controller to other departments and regulatory bodies; and the controller's relation to price setting and inventories, depreciation policies, internal auditing, expense control and budgeting; and financial reports to management, stockholders, and employees. Prerequisite: Accounting 1-2. Open to seniors. (Fall—evening.)
- 198 **Case Problems in Management (3)** Eastin, Page  
Principles and techniques of management illustrated by cases drawn from business and industry. Prerequisite: Business Administration 102, 105, 131, 141. (Fall and spring—day and evening.)
- 209 **Seminar: Personnel Management (3)** Eastin *Third Group*  
Discussion of industrial personnel and manpower management, and research in advanced problems. (Fall—evening; summer 1965.)
- 210 **The Personnel Manager (3)** Jessup  
The job of the personnel manager and his place in the organization; relations of the personnel manager to other executives; the personnel manager's policy role, and his relations with the chief executive. Key problems of the senior personnel executive. (Spring—evening.)
- 211 **Personnel Management and Industrial Relations (3)** Barrett  
A survey of personnel management practices and procedures, including labor-management relations. (Fall—day.)
- 218 **Survey of Data Processing (3)** McCarthy, Daly  
A survey of modern data processing systems with emphasis on the management problems associated with the installation and use of such systems. (Fall and spring—evening.)
- 219 **Digital Computer Programming Concepts (3)** McCarthy, Schwartz  
Machine functions and programmed control, instructions and programs, subroutines, general purpose programming, business oriented programming languages. Prerequisite: Business and Public Administration 204 or permission of instructor. (Fall—evening.)

- 220 **Comparative Digital Computer Systems and Their Management (3)** McCarthy, Schwartz  
Properties and capacities of the range of data processing equipments in use today, special purpose equipments in business, recent and prospective equipment developments. Fundamentals of data processing installation management. Prerequisite: Business Administration 218 or 219, or permission of the instructor. (Spring—evening.)
- 221 **Management Information Systems Development and Application (3)** McCarthy, Schwartz  
The analysis and design of management information systems; the integration of data processing in the regular operations of the government or business organization, and its impact on management organization and decision making. Management's part in systems planning is emphasized. Prerequisite: Business Administration 218 or 219, or permission of the instructor. (Fall—evening; summer 1965—offered as *Application of Digital Computers*.)
- 222 **Seminar: Advanced Digital Computer Concepts (3)** Alexander  
Study of advanced problems in the design and application of computer systems. (Spring—evening.)
- 227 **Linear Programming (3)** Bracken  
Introduction to the vocabulary and methodology of management science through the study of linear programming techniques. Case studies. Prerequisite: Business and Public Administration 204. (Fall—evening.)
- 228 **Introduction to Operations Research for Management (3)** Bracken  
Operations research as an approach to the solution of management problems. Emphasis is on the relevance and limitations of operations research. Practical applications are examined. Prerequisite: Business and Public Administration 204. (Spring—evening.)
- 231 **Corporate Financial Problems (3)** Dockeray, Houston  
Financial practice in promotion, consolidation, and mergers; capital structure adjustments; and reorganization. (Fall—evening; summer 1965.)
- 232 **Seminar: Business Finance (3)** Dockeray, Houston  
Research in advanced financial problems. (Spring—evening.)
- 237 **Investment Analysis (3)** Dockeray, Shaffner  
An advanced course in the applications of investment principles and analytical techniques to the selection of investments. Prerequisite: Business Administration 138. (Fall—evening.)
- 238 **Seminar: Investments (3)** Dockeray, Shaffner  
Research in investment problems, techniques of selection and the management of various types of funds. Prerequisite: Business Administration 138. (Spring—evening.)
- 241 **Advanced Marketing Management (3)** Walters  
Marketing management problems and policies in major decision areas of product planning, channels of distribution, advertising, personal selling, sales promotion, pricing, and development of integrated marketing programs. Marketing research and other tools useful in decision making. Case analysis. (Fall—evening; summer 1965.)
- 242 **Seminar: Marketing Theory (3)** Walters  
Critical review of the development of marketing thought and important marketing literature. Special and current problems and or trends in marketing and their impact on the firm and society. Prerequisite: Business Administration 241. (Spring—evening.)
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- 243 **Advanced Marketing Research (3)**  
Marketing research as an aid to decision making and increased efficiency in marketing, marketing research process, critical appraisal of methods and results, applications of marketing research. Cases, selected readings, and research projects. Prerequisite: a course in basic statistics. (Spring—evening.)
- 247 **Advertising Management (3)** Walters  
Case studies and text material dealing with executive determination of advertising organization, basic strategy relative to marketing program, promotional program, advertising appropriation, preparation and scheduling of advertisements, media selection, and determination of effectiveness. Advertising research and economic and social aspects. (Fall—evening.)
- 248 **International Marketing (3)** Walters  
Organization for international marketing, foreign demand analysis, product development and policies, marketing structure and trade channels, advertising and promotion problems and policies, pricing, credits and collections, and legal aspects. Particular emphasis on development of effective international marketing strategy. (Spring—evening.)
- 250 **Procurement and Contracting (3)**  
An examination of the business aspects of federal procurement and contract management. (Not offered 1965-66.)
- 251 **Retail Management (3)**  
Managerial problems and policies concerning financing, location, organization structure, merchandise policies, advertising and sales promotion, personnel management, operating and service policies, accounting and control, and other related retail management problems. Case analysis. (Fall—evening.)
- 255 **Seminar: Foreign Trade I (3)** Grub  
Research; analysis and discussion of foreign trade institutions, public and private; principles and theories of international trade; United States trade and Western hemisphere problems. (Fall—evening.)
- 256 **Seminar: Foreign Trade II (3)** Grub  
Problems of economic integration with emphasis on the European Economic Community. United States foreign trade policy, study of international business management problems, development of executives for international operations. (Spring—evening.)
- 261 **Business Economics I (3)** Huntley  
Applications in economic analysis. Uses economic theory and statistics for establishment of criteria for business decisions involving policies on profits, prices, production, investments, and inventories. Prerequisite: Economics 217 and Statistics 111-12 or the equivalent, or consent of the instructor. (Fall—evening.)
- 262 **Business Economics II (3)** Huntley  
Utilizes statistical techniques and aggregate economics for appraising economic forecasts and making business forecasts. Prerequisite: Economics 218 or the equivalent, or consent of the instructor. (Spring—evening.)
- 263 **Business Economics III: Advanced Topics in Managerial Economics (3)** Huntley  
Case studies and problems in use of economic statistics, operations analysis, and other developing techniques in mathematics applied to empirical business decisions. Prerequisite: Business Administration 261 and 262, or consent of the instructor. (For doctoral students planning to write dissertations in this field.) (Not offered 1965-66.)



- 273-74 **Readings in Business (3-3)** **The Staff**  
Advanced readings in the fields of finance, marketing, and personnel management. Admission by permission of the instructor. (Academic year—evening.)
- 286 **Management in the Armed Forces (3)** **Jessup**  
Special problems of military organization and management; applicability of business management techniques to the armed forces. (Not offered 1965-66.)
- 288 **Executive Leadership (3)** **Krieger**  
Examination of principles and problems of executive leadership and development; intensive consideration of basic issues and guides to executive action in business and public administration; review of the literature, significant research findings, and practical illustrations. (Fall—evening.)
- 291 **Seminar: Business Management (3)** **Ericson**  
Research on various phases of management as practiced in American industry. (Fall and spring—evening.)
- 293-94 **Business Research (3-3)** **The Staff**  
(Summer 1965.)
- 296 **Seminar: Controllershship (3)** **Stromsem**  
Research on advanced problems of financial analysis and management. (Spring—evening.)
- 297 **Case Studies in Business Administration (3)** **Jessup**  
Problems of management are analyzed with the view of developing a practical solution; cases are used to show the problems of personnel in marketing, industrial management, finance, etc. (Fall and spring—evening.)
- 299 **Thesis Seminar (3)** **Dockeray and Staff**  
An examination of thesis standards, research philosophy, and methodology. (Fall and spring—evening; summer 1965.)
- 300 **Thesis (3)** **The Staff**  
(Fall and spring—as arranged; summer 1965.)

#### **COURSES OFFERED IN SPECIAL PROGRAMS**

In addition to the regular courses announced above, the University offers the following business administration courses for students enrolled in the following special programs: Navy Graduate Financial Management Program, Air Force Advanced Management Program, and Engineering Administration.

- 107 **Labor-Management Contracts (3)**
- 211 **Personnel Management and Industrial Relations (3)** (Summer 1965)
- 235 **Financial Management (3)**
- 253 **Procurement and Distribution (3)**
- 263-64 **Business Organization and Management (3-3)**
- 269 **Readings and Conferences in Controllershship (2 or 3)** (Summer 1965)
- 284 **Readings and Conferences in Management (2)**
- 290 **Research Seminar: Management (3)**
- 295 **Research Seminar: Controllershship (3)**

## BUSINESS AND PUBLIC ADMINISTRATION

- 201 **Advanced Administrative Management** (3) Eastin, Ericson *Third Group*  
An advanced course in administration emphasizing principles and practices common to administrative units of all kinds. (Fall—day and evening; spring—evening; summer 1965.)
- 204 **Quantitative Factors in Administration** (3) Bradley, Tosini  
Developments in quantitative methods of administration. (Fall and spring—evening; summer 1965.)
- 205 **Seminar: Communication and Executive Action** (3) Morrow  
Seminar in the communication processes. Research and analysis, identification of factors relating to receptivity; the dynamics of communication. (Spring—evening.)
- 206 **Personnel Management** (3) Torpey  
Basic principles; structure and organization of personnel offices; responsibilities; interagency relationships; personnel staffing, training, and work measurement. (Fall—evening.)
- 207 **Human Factors in Administration** (3) Eastin, Ericson, Pollock  
Individual, group, intergroup, and other human behavior and development; application of social science research to administration. Practical applications will be emphasized. (Fall—evening; summer 1965.)
- 208 **Current Issues in Organizational Behavior** (3) Lippitt  
A study of such current issues as automation, ethics, labor-management relations, and similar problems that affect the human organization. Students will do field research projects on these issues. Prerequisite: Business and Public Administration 207. (Summer 1965—offered as *Human Factors in Administration*.)
- 209 **Colloquium in Behavioral Sciences** (3) Lippitt  
Supervised study in depth and field projects in the behavioral sciences. Primarily for doctoral students. (Fall—evening.)
- 262 **Contemporary Administrative Theory and Practice** (3) Ericson  
Current theories and trends in management with particular attention to the behavioral sciences communications and applicability of research. (Spring—evening.)
- 268 **Management Engineering** (3) Clewlow  
Analysis of the techniques for initiation and implementation of management engineering programs, with emphasis on organization and methods surveys including the study of work measurement, work simplification, management audits, and other management improvement programs. Not open to students who have taken Business and Public Administration 269. (Fall and spring—evening.)
- 269 **Management and Information Systems** (3) Page  
A survey course: the collection and processing of management information, management engineering, work simplification, development of methods, procedures, and systems; systems analysis. Not open to students who have taken Business and Public Administration 268. (Fall—day and evening.)
- 287 **Relation of Government to Business** (3) Cloutier  
Activities of government in their relation to business management in such areas as labor relations, wages, production, and prices. Trend and change in economic activity and its bearing upon government policy. (Spring—evening.)

## COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers the following business and public administration courses for students enrolled in the Navy Graduate Financial Management Program and the Air Force Advanced Management Program.

- 206 *Personnel Management* (3)
- 207 *Human Factors in Administration* (3) (Summer 1965)
- 208 *Current Issues in Organizational Behavior* (3)
- 268 *Management Engineering* (3) (Summer 1965)

## HEALTH CARE ADMINISTRATION

- Second Group* 153-54 **Survey of Health Care Organization and Procedures** (3-3)  
(Formerly Health Care Administration 150-51)

Lectures and discussions. (May be audited.) Primarily for students in Continuing Education in Health Care and related fields or medical care organizations who wish an over-all knowledge of organization and procedures used in hospitals, long-term care facilities such as nursing homes, and homes for the aged. This is a two-semester sequence. (Not open to degree candidates in Health Care Administration.) Students wishing to take the course for graduate credit must take the Health Care Administration 203 laboratory. (Academic year—evening.)

- Third Group* 202 **Introduction to Health Care Administration** (3)

Lecture and discussion (2 hours), laboratory (2 hours). Survey of community health services, public health organizations, voluntary agencies, and private practitioners (with attention to state and national health resources); medical terminology, communicable diseases, environmental sanitation, and biostatistics. (Fall—day and evening.)

- 203 **Organization and Management** (3) Gintzig, Cook

Lecture and discussion (2 hours), laboratory (2 hours). The history and current character of institutional health care. Organizational functions and structure of various kinds of hospitals and clinics, including long-term care facilities such as mental hospitals, homes for the aged, nursing homes, and others related to health care administration. (Fall—day and evening.)

- 204 **Health Care Administration Planning and Support Agencies and Associations** (3) The Staff

The functions performed and special support techniques of hospital, medical, public health, nursing home, planning, educational, and similar associations. (Fall or spring—as arranged.)

- 205 **Hospital Management Procedures** (3) Cook, Letourneau,  
Schaffer, Gavazzi

Lecture and discussion (2 hours), laboratory (2 hours). A survey of hospital law; a study of hospital forms, procedures, and systems; hospital programs pertaining to disaster relief, safety, fire prevention; personnel, purchasing, and volunteer services; and the operational peculiarities of hospital departments. (Fall—as arranged; spring—day and evening.)

- 206 **Case Studies in Health Care Administration** (3) Gibbs

Discussion (2 hours), laboratory (2 hours). General ideas about administration as applied to practical cases. Emphasis on policy making, planning, controlling, and organizing in hospitals. It includes case applications of Health Care Administration Law. Prerequisite: Business and Public Ad-



ministration 201 and Health Care Administration 203. (Spring—day and evening.)

- 207 **Management Analysis in Health Care Institutions (3)** Gintzig  
Lecture (2 hours), laboratory (2 hours). Basic investigation and problem solving techniques, including various methods of collecting, analyzing, reporting, and using information that can be made available to administrators of hospitals and other medical care institutions. Part of this time is devoted to an investigation on which written and oral reports are based. (Spring—as arranged.)

- 209 **Health Care Economics (3)** Camp  
Lecture (2 hours), laboratory (2 hours). Health care economics including an appreciation of: the nature and characteristics of the consumers and providers of health care, the costs and expenditures involved, health prepayment and insurance programs, the impact of social and economic factors on the health care institution. (Fall—as arranged; spring—day and evening.)

- 212 **Planning and Constructing Health Care Facilities (3)** Cook  
Lecture (2 hours), laboratory (2 hours). Regional and specific aspects of long- and short-term health care planning, designing, constructing, purchasing, equipping, and supplying. Prerequisite: Health Care Administration 202 and 203. (Spring—day and evening.)

- 213 **Administration of Health Care Systems (3)** The Staff  
The various patterns of hospital and health care such as church ownership, proprietary, group practice, Salvation Army, governmental, industrial, unions, nursing homes, community, and their special characteristics. (Fall or spring—as arranged.)

- 221-22 **Fundamentals of Medical Science and Medical Terminology (3-3)** Quandt  
A study of the fundamentals of medical science and medical essentials presented through lectures in the medical specialties. Includes a study of terms related to all areas of medical science, hospital service, and the paramedical specialties. (Academic year—day and evening.)

- 223-24 **Introduction to Health Records Administration (3-3)** Quandt  
Lecture and discussion (2 hours), laboratory (2 hours). History of medical records, report preparation, coding and indexing procedures, ethics, methods of securing and preserving medical records, and medical record practices and procedures in areas such as radiology, pathology, outpatient department, and social services. (Academic year—day and evening.)

- 225-26 **Principles and Problems of Health Records Administration (3-3)** The Staff  
Lecture and discussion (2 hours), laboratory (2 hours). Research techniques and qualitative analysis pertaining to medical records. Ethics involved in handling records. Problems encountered in medical record departments in hospitals, clinics, and other essentially medical facilities. (Academic year—day and evening.)

- 229 **Health Records Administration Internship (3)** The Staff  
Four-month internship beginning in June of each year, in approved medical facilities under qualified medical records administrators. A final written report of a major work project, assignments for directed practical experience and practice in the use of standard equipment found in medical records departments.

- 250 **Administration for Mental Care (3)** The Staff  
Special characteristics of administration required in mental hospitals, psychiatric sections of general hospitals, and others. (As arranged.)

- 260 **Administration for Long-term Care Facilities (3)** Capusan  
A survey of the medical and nursing procedures designed for administrators

of long-term care facilities including nursing homes and facilities for the aged. (Fall—evening.)

- 261 **Business Procedures for Long-term Care Facilities (3)** Capusan  
Business procedures with special application to administration of facilities for long-term care including nursing homes and homes for the aged. (Spring—evening.)
- 265-66 **Readings in Long-term Care Administration (3-3)** The Staff  
(Formerly Health Care Administration 262-63)  
Advanced studies in selected aspects of administration of long-term care facilities, including nursing homes, homes for the aged, and others. (As arranged.)
- 267 **Social Gerontology for the Administrator (3)** Tibbitts, Mickey  
The special characteristics of the elderly with which administrators of long-term care facilities should be acquainted. (Fall—evening.)
- 270 **Research in Health Care Administration (3)** The Staff  
Field research in health care administration. Student investigates some phase of health care administration. Primarily for doctoral students. Open to other graduate students with the consent of the instructor. (Fall or spring—as arranged.)
- 285-86 **Readings in Health Care Administration (3-3)** The Staff  
Supervised readings in some special areas or subdivisions of health care administration. Primarily for doctoral students. Open to other graduate students with consent of the instructor. (Academic year—as arranged; summer 1965.)
- 287 **Seminar: Integration of Health Care Administration (3)** The Staff  
Primarily for doctoral students. (Fall or spring—as arranged.)
- 288 **Seminar: Field Problem Studies in Health Care Administration (3)** The Staff  
Selected administrative issues and problems arising in health care facility situations are discussed and evaluated. (Fall or spring—as arranged.)
- 293-94-95 **Residency I (3-3-3)** Camp, Gibbs, Cook  
Twelve-month residency, beginning each year June 1 or July 1. Work experience under a qualified preceptor, periodic seminars with the University staff, periodic written progress reports, and a written major report. (Other courses may be substituted for Health Care Administration 294-95 as appropriate.)
- 296-97-98 **Residency II (3-3-3)** Gibbs  
For selected students who take a second twelve-month residency.
- 299-300 **Thesis (3-3)** The Staff

## **PUBLIC ADMINISTRATION**

- Third Group* 213 **Administration in Government (3)** D. Brown, Cloutier  
A critical analysis of federal administrative organizations, their achievements and pathologies. The roles of Congress, the Presidency, the Courts, interest groups, political parties, and the public in the administrative process are studied with special attention to centripetal and centrifugal forces at work. (Fall—day and evening; spring—evening; summer 1965.)
- 215 **Comparative Administrative Systems (3)**  
Examination and analysis of the administrative systems of the major foreign

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governments with particular attention to practices applicable to administration in the United States. (Fall—evening.)

**216 Administration of International and Supranational Activities (3)** Jordan

Analysis of the evolution and application of the administrative process in selected international and supranational activities. Problems of organization and management in multi-national supported and staffed activities. Prerequisite: Public Administration 215. (Spring—as arranged.)

**217 Seminar: Developmental Administration (3)** D. Brown

Examination of the theories of the transfer of administrative capability from one country to another, factors relating to the indigenous culture, strategies of aid, examination of specific national and supranational programs. (Fall—evening.)

**221 Management in the Executive Branch (3)**

Analysis of the application of organizational theories and practices in the Executive Branch of the Federal Government with particular emphasis on staff responsibilities and relationships and internal organization and control. Special problem areas are examined. (Spring—evening.)

**225-26 Internship in the Administrative Processes (3-3)** Sommers

This course is open only to persons selected by government agencies for participation in approved intern programs. (Academic year—as arranged.)

**232 Federal Personnel Procedures (3)** Torpey

Study of such personnel functions as recruitment, selection, placement, promotion, supervision, evaluation, classification, and training. Practical problems of personnel administration. (Spring—evening; summer 1965.)

**233 Seminar: Manpower Development and Utilization (3)** Sommers

Research projects and case studies in ways and means of increasing employee potential, use of training programs, executive development, incentive systems. (Fall—evening.)

**243 Local Government Law \* (3)** Mallison

The decision-making processes in metropolitan and local communities; types and objectives of city, county, and special function local government units; intergovernmental units; intergovernmental relations; original organization and changes; local lawmaking; community planning and development. (Spring—evening.)

**246 Urban Dynamics (3)** Beckman  
(Formerly Business Administration 213)

Background course for the developing curriculum in city planning. The course traces the forces that lie behind investment decisions which in turn determine the development of cities. (Spring—evening.)

**249 Administration in Metropolitan Area Governments I (3)** Cloutier  
(Formerly Public Administration 244)

Examination of public administration at the local level. Developments and trends growing out of the changing urban pattern. (Fall—evening.)

**250 Administration in Metropolitan Area Governments II (3)**

Examination of the increasingly complex planning and governmental problems of large metropolitan regions. Prerequisite: Public Administration 249. (Spring—evening.)

\* Same as Law 349



- 251 **Governmental Budgeting (3)** Posner  
The role of budgeting in management; the principles and practices of budgetary formulation and administration. (Fall and spring—evening; summer 1965.)
- 252 **Seminar: Planning and Programming (3)** Page, McConville  
The administrative processes of planning and programming in government, relationships to budgeting, planning and programming as a basis of managerial control, evaluation of accomplishments. (Fall—evening.)
- 254 **Financial Management in the Federal Service (3)** Krieger  
Function of financial management in federal agencies; special problems analyzed; comparison of the financial management (controllership) function in government and business. (Spring—evening.)
- 260 **Seminar: Policy Formulation and Administration (3)** D. Brown  
Development of agency goals and objectives and administration of agency policies, influence of individuals upon them, factors involving informal organization and role of executive in furthering administrative policy. (Spring—evening.)
- 261 **The Public and the Administrator (3)** Stromsem  
The nature of the public interest, ways of determining public opinion, public opinion and the decision-making process, theories and methods of working with the public, interest groups, public relations and information programs. (Fall—evening.)
- 271 **Readings and Conferences in Public Administration (3)** The Staff  
Advanced directed reading in specific areas of public administration. (Fall—evening.)
- 272 **Seminar: Public Personnel Administration (3)** Sommers  
Advanced directed reading in specific areas of public personnel administration. (Spring—as arranged.)
- 273 **Colloquium in Public Administration and American Political and Social Institutions (3)** Cloutier  
Supervised study in depth of contemporary literature in selected fields. Primarily for doctoral students. (Fall—evening.)
- 295 **Seminar: Urban Housing \* (3)**  
Consideration of housing problems growing out of increasing urban populations. (Fall—day.)
- 296 **Fundamentals of Urban Design \* (3)**  
Principles of urban design and arrangement, traffic flow, use of space to achieve urban efficiency with maximum visual amenity. (Fall—day.)
- 297 **Seminar: Public Administration (3)** The Staff  
Advanced research on selected phases of public administration. (Fall and spring—as arranged; summer 1965.)
- 298 **Case Studies in Public Administration (3)** Cloutier  
(Formerly Public Administration 212)  
Analysis and discussion of problems in public management by use of the case method. (Spring—evening; summer 1965.)
- 299 **Thesis Seminar (3)** The Staff  
An examination of thesis standards, research philosophy, and methodology. (Fall and spring—evening; summer 1965.)

\* Offered by Virginia Polytechnic Institute on The George Washington University campus. Open to qualified GWU students

(Fall and spring—as arranged; summer 1965.)

#### **COURSES OFFERED IN SPECIAL PROGRAMS**

In addition to the regular courses announced above, the University offers the following public administration courses for students enrolled in the Air Force Advanced Management Program and in Engineering Administration.

213 *Administration in Government* (3) (Summer 1965)

251 *Governmental Budgeting* (3) (Summer 1965)

260 *Seminar: Policy Formulation and Administration* (3)

#### **Greek**

See "Classical Languages and Literatures"

#### **Hebrew**

See "Classical Languages and Literatures"

#### **History\***

*Professors* E. L. Kayser, Wood Gray (*Chairman*), H. M. Merriman, R. H. Davison, W. C. Davis, R. B. Thompson, R. C. Haskett

*Professorial Lecturers* R. P. Multhaupt, G. O. Kent, W. F. Cannon

*Associate Professors* R. P. Sharkey, R. A. Naylor (*Visiting*)

*Associate Professorial Lecturers* J. I. Robertson, Jr., R. B. Simons, L. G. Schwoerer, P. H. Stoddard

*Assistant Professors* C. J. Herber, P. P. Hill, R. W. Kenny, Michael Gasster

*Assistant Professorial Lecturers* Virginia Purdy, C. M. Bacon

*Bachelor of Arts with a major in History (Field-of-Study).*—Prerequisite: the Arts and Letters curriculum, page 57, including History 39–40 and 71–72.

Required: the general requirements, pages 63–67, and the passing of the History major examination at the end of the senior year.

The major, and the major examination which attests it, is centered on the study of the Mediterranean rise, European development, and trans-Atlantic spread of Western Civilization, its interaction with other civilizations in a world context, and its continuing challenges to the present day. Under the guidance of an adviser the student will arrange his program in History to attain, insofar as possible, a balanced evaluation of (1) the rise of civilization in Europe from its Classical origins to the eve of the French Revolution; (2) the historic problems of modern Europe in the age of industry and ideology since 1789; (3) the political, social, economic, and cultural forces of the United States in their world setting since 1607; and (4) the nature and development of civilization in the principal areas outside of the North Atlantic community. A six-hour research seminar to give training

\* Staff of Instruction for the academic year 1964–65

in fundamental techniques is a required part of each major's program and a proseminar (History 199-200) is offered as a means of integrating the student's understanding of the continuity of Western civilization in its world context. For details relating to the administration and content of the major, see the pamphlet on this subject which is available in the offices of the Dean of Columbian College of Arts and Sciences and the Chairman of the Department of History.

*American Thought and Civilization 101 American Civilization* is recommended as a senior-year elective for History majors.

*Bachelor of Arts with a major in Latin American Civilization (Field-of-Study).*—Prerequisite: the Arts and Letters curriculum, see page 57.

Required: the general requirements, pages 63-67, and the passing of the Latin American Civilization major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes political and social history, economic development, governmental structures and international relations, and the principal literary works and writers of the Latin American republics. The Department of History provides a proseminar (History 197-98) intended to assist the student in preparing himself for the major examination. For further details, see the pamphlet, which is available in the Office of the Dean of Columbian College of Arts and Sciences.

*Master of Arts in the field of History.*—Prerequisite: the degree of Bachelor of Arts with a major in History (high B average or better) from this University, or the equivalent, and the approval of the Department. Applicants from other institutions must present scores on the Graduate Record Examination with the Advanced Test in History and arrange for at least two of their former professors to write letters of evaluation to the Chairman of the Department of History.

Required: the general requirements, pages 69-71. Of the twenty-four semester hours of required second- and third-group courses (exclusive of the thesis), at least six must be in third- or fourth-group history courses; a maximum of six may be in a closely related field outside the Department of History as approved by the Department. Master's candidates are responsible for arranging with instructors of second-group courses for extra work, in order to receive graduate credit for such courses.

*Master of Arts in the field of Latin American Civilization.*—Prerequisite: the degree of Bachelor of Arts with a major in Latin American Civilization from this University, or the equivalent.

Required: the general requirements, pages 69-71. Course work and the comprehensive examinations will embrace political and social history, governmental structures and international relations, economic development, and principal literary works of Latin America. The thesis may be written in any one of these four fields. All courses must be approved in advance by the Adviser.

*Doctor of Philosophy.*—See pages 75-84.

*Bachelor of Arts in Education with a teaching field in History.*—Prerequisite: the Education curriculum, page 59.

Required: the History option and the professional courses listed on page 99.

#### *First Group 39-40*

#### **The Development of European Civilization in Its World Context (3-3)**

Kayser, Herber, Kenny, Simons

Primarily for freshmen. *First half:* the political, social, economic, and cultural history of the Old World from ancient times to 1715. *Second half:* from 1715 to the present. (Academic year—day and evening; summer 1965.)

71-72

#### **The Development of the Civilization of the United States (3-3)**

Hill

Primarily for sophomores. *First half:* the political, social, economic, and cultural forces of the United States in their world setting from 1492 to 1865.



*Second half:* from 1865 to the present. (Academic year—day and evening; summer 1965.)

- 105-6 **Introduction to the History of Science (3-3)** Multhauf *Second Group\**  
*First half:* the ancient natural philosophy and the growth of special sciences through the 17th-18th century scientific revolution. *Second half:* the main lines of development of astronomy, physics, chemistry, biology, and medicine from the mid-18th century to the scientific revolution of the early 20th century. Prerequisite: History 39-40 or a background in science. (Academic year—evening.)
- 109-10 **Ancient History (3-3)** Kayser  
The political, social, and intellectual aspects will be considered. *First half:* the ancient Near East and Greece. *Second half:* Rome. (Academic year—day.)
- 111-12 **Medieval History (3-3)**  
The political, social, and intellectual aspects will be considered. *First half:* from the 4th to the 12th century. *Second half:* from the 13th through the 16th century. (Academic year—day.)
- 130 **Nationalism (3)** Kayser  
The historical evolution of modern nationalism. (Summer 1965.)
- 131-32 **History of Germany (3-3)** Herber  
The political, social, and cultural development of the German people. *First half:* from the Reformation to 1871. *Second half:* from 1871 to the present. (Not offered 1965-66.)
- 141-42 **History of France (3-3)** Herber  
A survey of the political, social, and cultural history of France. *First half:* from earliest times to 1815. *Second half:* from 1815 to the present. (Academic year—day.)
- 145-46 **History of Russia (3-3)** Thompson  
An 1100-year survey of the rise and revolution of Russia. *First half:* Russia under the Old Regime, 860-1900. *Second half:* Revolution and Soviet rule, 1900-1960. (Academic year—day.)
- 147 **Economic History of Europe † (3)** Sharkey  
European economic development since the Middle Ages with particular emphasis on the period following the Industrial Revolution. The evolution of capitalism and its varying impact upon the societies of Europe will be treated. (Fall—evening.)
- 149-50 **European Diplomatic History (3-3)** Davison  
Background of the European state system and of diplomatic practices and relations since the Congress of Vienna, with emphasis on the policies and actions of the great powers and their statesmen. *First half:* to 1878. *Second half:* since 1878. (Academic year—evening.)
- 151-52 **History of England and Great Britain (3-3)** Kenny  
A general survey of the development of English civilization and its impact on Western culture. *First half:* to 1660. *Second half:* since 1660. (Academic year—day; summer 1965—History 152 (3).)

\* History 39-40 is prerequisite to courses 109 through 152 and 187 through 196; History 71-72, to courses 170 through 184; either History 39-40 or 71-72, to courses 161 through 166. Prerequisite to History 105-6 is either History 39-40 or a background in a science.  
† An interdepartmental course offered by the departments of History and Economics. Students may register in either department.

- 161 **Ancient Americans (3)** Davis  
A study of the Maya, Aztec, Inca, and other early civilizations of North and South America. (Summer 1965.)
- 162 **Iberian Background of Latin America (3)** Davis  
History of Spain and Portugal, with emphasis on developments leading to the rise and decline of the Spanish and Portuguese empires. (Summer 1966.)
- 163 **Colonial Latin America (3)**  
Political, economic, social, and institutional developments in Spanish and Portuguese America from the conquest through the wars of independence. (Fall—evening.)
- 164 **South America since Independence (3)** Davis  
Development of the independent South American states in the 19th and 20th centuries. (Summer 1966.)
- 166 **Mexico and the Caribbean since Independence (3)**  
A survey of the republics of Mexico, Central America, and the Caribbean islands. (Spring—evening.)
- 170 **American Colonial History (3)** Haskett  
The settlement of the British colonies, the development of provincial institutions, and the emergence of an American civilization in the 17th and 18th centuries. (Not offered 1965-66.)
- 171-72 **Social History of the United States (3-3)** Gray  
Daily life, institutions, intellectual and artistic achievements of the Agrarian Era, 1607-1861, and the Urban-Industrial Era, 1861 to the present time. (Academic year—day.)
- 173 **Representative Americans (3)** Gray  
A biographical approach to national history. Some thirty significant and pivotal personalities in the development of the United States in government, business, science, religion, journalism, the arts, and social reform. (Fall—day; summer 1965.)
- 175-76 **Political and Constitutional History of the United States (3-3)** Haskett  
*First half:* to the eve of the Civil War. *Second half:* the Civil War to 1940. (Academic year—day; summer 1965—History 175 (3).)
- 177 **The South (3)** Robertson  
Rise of the plantation system and slavery; the intersectional conflict; and the problems and progress of the New South. (Fall—day.)
- 178 **The Civil War (3)** Robertson  
(Formerly History 179)  
A survey of the causative factors leading to Civil War and of the social, political, military, economic, and diplomatic aspects of the War itself, the immediate and long-range effects of the War on American life. (Spring—day.)
- 179-80 **Economic History of the United States \* (3-3)** Sharkey  
(Replaces former History 174)  
An analysis of the process of economic growth in the United States from Colonial times to the present. The development of various sectors in the economy such as agriculture, transportation, manufacturing, and banking will be treated and their interdependence stressed. *First half:* 1607 to 1865. *Second half:* 1865 to the present. (Academic year—evening.)

\* An interdepartmental course offered by the departments of History and Economics. Students may register in either department.

- 181-82 **Diplomatic History of the United States (3-3)** Merriman, Hill  
Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; and the activities of the American secretaries of state and diplomatic agents. *First half:* to 1898. *Second half:* since 1898. (Academic year—day and evening; summer 1965—History 182 (3).)
- 183 **Oversea Expansion of the United States (3)** Merriman  
The political, economic, social, and cultural life of our outlying possessions. (Spring—day.)
- 184 **Canada and the United States (3)** Merriman  
The historical background and main trends in the relationship of the two English-speaking peoples of North America. (1966-67 and alternate years.)
- 187 **History of Modern China (3)** Gasster  
China since 1840, with particular attention given to political developments. (Fall—evening.)
- 188 **East Asia in World Affairs (3)** Gasster  
The history of Chinese and Japanese relations with the West, emphasizing the roles of China and Japan in international politics from the middle of the 19th century to the present. (Not offered 1965-66.)
- 189 **History of India (3)** Thompson  
(Formerly History 190)  
The civilization of India and her neighbors from the beginnings to independence. (Not offered 1965-66.)
- 190 **Modern India (3)** Hinton  
Basic characteristics of traditional Indian history and civilization, achievements and failures of British rule under the East India Company and the Crown, the resurgence of tradition and the rise of nationalism, progress toward self-government, partition and independence, achievement and problems of independent India and Pakistan. (Not offered 1965-66.)
- 193 **History of the Near East (3)** Davison  
The Byzantine, Arab, Persian, and Islamic backgrounds of Near Eastern history; the rise and decline of the Ottoman Empire; the action of European powers in the area; and the Ottoman breakup into the Turkish Republic and other successor states. (Fall—evening.)
- 195-96 **History of East Asia (3-3)** Gasster  
The civilizations of China and Japan, with emphasis on cultural development and social organization. *First half:* from the beginnings to about 1800. *Second half:* the traditional societies on the eve of the modern era, and their responses to Western cultural influences since the middle of the 19th century. (Academic year—day.)
- 197-98 **Proseminar: Latin American Civilization \*** (3-3) Davis, Robb, Sammons  
Reading course for coordination and review. Open only to majors in Latin American Civilization. (Academic year—as arranged.)
- 199-200 **Proseminar: Readings for the History Major \*** (3-3) Thompson, Herber  
Limited to majors in History. Readings and discussions on major trends in the history of Western civilization, taken in their world setting, and includ-

\* Students who plan to register for proseminars, seminars, or reading courses should confer with the individual instructor as early as possible in the semester prior to enrollment, in order to receive the approval of the instructor and to reserve space in the course; students should also arrange with the instructor to receive reading lists, instructions, and advance assignments.



ing representative selections from the classics of historical literature. Students cannot receive credit for both History 199-200 and History 201-2. (Academic year—day and evening.)

- Third Group 201-2 History and Historians (3-3)** The Staff  
Students cannot receive credit for both History 201-2 and History 199-200. (Academic year—as arranged.)
- 241-42 **Seminar: Modern European History \*** (3-3) Herber  
Prerequisite: appropriate preparation and consent of the instructor. (Academic year—evening.)
- 244 **History of the Comintern (3)** Thornton  
Activities of the Communist Third International. (Fall—evening.)
- 245-46 **Seminar: Russian History \*** (3-3) Thompson  
Prerequisite: History 145-46 or the equivalent. (First half: fall—day. Second half: not offered 1965-66.)
- 249 **Seminar: European Diplomatic History \*** (3) Davison  
Prerequisite: History 149-50 or the equivalent. (Spring—day.)
- 251-52 **Seminar: English History \*** (3-3) Kenny  
Prerequisite: History 151-52 or the equivalent. (Academic year—evening; summer 1965—History 251 (3).)
- 261-62 **Seminar: Latin American History \*** (3-3)  
Prerequisite: six semester hours selected from History 161, 162, 163, 164, 166. (Academic year—day.)
- 266 **Reading Seminar: Contemporary Latin America (3)** Naylor  
Includes an analysis of socioeconomic, political, philosophical, and technological problems and prospects of present-day Latin America. Prerequisite: appropriate preparation and consent of the instructor. (Spring—evening.)
- 271-72 **Seminar: Social History of the United States \*** (3-3) Gray  
Prerequisite: History 171-72 or the equivalent. (Academic year—day; summer 1965—History 272 (3).)
- 275-76 **Seminar: American Political and Constitutional History \*** (3-3) Haskett  
Prerequisite: History 175-76 or the equivalent. (Academic year—day.)
- 281-82 **Seminar: Diplomatic History of the United States \*** (3-3) Merriman  
Prerequisite: History 181-82 or the equivalent. (Academic year—day.)
- 283-84 **Seminar: United States since 1900 \*** (3-3) Hill  
Prerequisite: History 181-82 or the equivalent. (Academic year—day; summer 1965—History 283 (3).)
- 291-92 **Seminar \*** (3-3) The Staff  
Prerequisite: approval of the Department. (Academic year—as arranged; summer 1965.)
- 293 **Seminar: History of the Modern Near East \*** (3)  
Prerequisite: History 193 or the equivalent. (Not offered 1965-66.)
- 295-96 **Seminar: History of the Modern Far East \*** (3-3) Gasster  
Prerequisite: History 195-96 or the equivalent. (First half: not offered 1965-66. Second half: spring—day.)
- 299-300 **Thesis (3-3)** The Staff  
Required of all candidates for the Master's degree specializing in history. (Academic year—as arranged; summer 1965.)

\* See footnote on page 245.

311-12	<b>Reading Course in Medieval History (3-3)</b> (Academic year—as arranged.)	<i>Fourth Group</i> * †
341	<b>Reading Course in Modern European History (3)</b> (Fall—day.)	Davison
345-46	<b>Reading Course in Russian History (3-3)</b> ( <i>First half:</i> not offered 1965-66. <i>Second half:</i> spring—day.)	Thompson
371-72	<b>Reading Course in American Social History (3-3)</b> (Academic year—day.)	Gray
375-76	<b>Reading Course in American Political and Constitutional History (3-3)</b> ( <i>First half:</i> summer 1965—offered as History 277 (3). <i>Second half:</i> fall—day.)	Haskett
379-80	<b>Reading Course in Economic History ‡ (3-3)</b> (Academic year—evening.)	Sharkey
381-82	<b>Reading Course in American Diplomatic History (3-3)</b> ( <i>First half:</i> fall—day. <i>Second half:</i> 1966-67 and alternate years.)	Merriman
395-96	<b>Reading Course in Modern Far Eastern History (3-3)</b> (Academic year—day.)	Gasster

#### **COURSE OFFERED IN AMERICAN STUDIES INSTITUTE SUMMER 1965**

- 270 *American Democratic Thought* (3)

### **Institute for Sino-Soviet Studies**

#### **MEMBERS OF THE INSTITUTE**

K. L. London (*Director*), Franz Michael (*Associate Director*), Herbert Block, Robert Boyd, Michael Gasster, Paul Gekker, P. W. Han, H. C. Hinton, J. J. Karch, W. H. Kraus, Thomas Larson, L. T. Lee, Bela Maday, Lothar Metzl, G. A. Olkhovsky, G. D. Overstreet, Victor Petrov, Nadine Popluiko, Bernard Ramundo, R. B. Thompson, T. P. Thornton, R. K. White, Thomas Wolfe

The Institute for Sino-Soviet Studies offers a program of specialized graduate study in the School of Government, Business, and International Affairs. Students who lack background in Soviet and China studies are required to take undergraduate courses selected by the adviser, from those listed on pages 255-56, as prerequisite to graduate work.

For description of the objectives and programs of the Institute, see pages 139-40.

\* See footnote on page 245

† Fourth group courses are limited to graduate students, but they are primarily for doctoral candidates.

‡ An interdepartmental course offered by the departments of History and Economics. Students may register in either department.

## ECONOMICS

- 133 **The Economy of the Soviet Union (3)** Gekker  
May be approved for graduate credit. (Fall—evening.)
- 267 **The Soviet Economy (3)** Gekker  
Development of the Soviet-type economy; organization, policies and problems, monetary, fiscal, production, allocative, foreign trade, economic growth. (Spring—evening.)

## EDUCATION

- 281 **Seminar: the Educational System of the Soviet Union (3)**  
(Fall—evening.)
- 282 **Seminar: the Educational System of Communist China (3)**  
(Spring—evening.)

## GEOGRAPHY

- 265 **Seminar: Geography of the Soviet Union (3)** Petrov  
A detailed study of the area, including physical features, economic geography, natural and energy resources, and industries. A discussion of the latest Soviet projects, of the Soviet transportation system, of agriculture, and of multinational population trends, with emphasis on population patterns along borderlands, especially the Sino-Soviet border. (Fall—evening.)
- 266 **Seminar: Geography of China (3)** Petrov  
A study of the physical and economic geography of the country, including discussion of China's emerging industries, energy resources, transportation system. Special emphasis will be given to the population "explosion"—its distribution and significance. Emphasis also on regional geography, particularly on regions along the Sino Soviet border, Manchuria, Tibet, Mongolia, Inner Mongolia, and Sinkiang. (Spring—evening.)

## HISTORY

- 244 **History of the Comintern (3)** Thornton  
Activities of the Communist Third International. (Fall—evening.)
- 245 **Seminar: Russian History (3)** Thompson  
A seminar in which students prepare research papers in some selected area of Russian history. For the fall semester 1965, the selected area from which individual topics are chosen will be the Russian Revolution. (Fall—day.)
- 295-96 **Seminar: History of the Modern Far East (3-3)** Gasster  
*First half:* social and intellectual revolution in Modern China: the replacement of the scholar-gentry by the intelligentsia of the 20th century. Emphasis placed upon the radical change that took place after 1919. *Second half:* the development of United States Far Eastern policy since 1898, with emphasis on the coming of World War II, and United States policy towards China since 1941. (*First half:* summer 1965. *Second half:* spring—day.)
- 346 **Reading Course in Russian History (3)** Thompson  
A graduate course for weekly reading and discussion in Russian 19th and 20th century history. Political and intellectual movements reflecting the rise and fall of the revolutionary cycle will be emphasized. (Spring—evening.)

## POLITICAL SCIENCE

- 215-16 **Seminar: the Sino-Soviet Blocs in World Affairs I-II (3-3)** London  
*First half.* A study of the most significant issues of the Communist move-



ment and its manifestations particularly in the Soviet Union and Red China: an examination of the concept and structure of the "world socialist system" and of intra-Bloc relations with special emphasis on the Sino-Soviet dispute. *Second half:* An examination of the political ramifications of the international Communist movement and Communist relations with the non-Communist world, with special emphasis on the nonaligned countries in Africa, Asia, and Latin America. (Academic year—evening.)

- 224 **Readings in Socialism and Communism (3)** Kraus  
A reading course designed, on the basis of selected readings of both primary and secondary works, to introduce students to the most significant developments in pre-Marxian and Marxian socialism and Leninist communism. (Fall—evening.)
- 225 **Seminar: Theoretical Problems of Marxism-Leninism (3)** Kraus  
Crucial theoretical problems, such as the nature of revolution, the dictatorship of the proletariat, the transition to communism, imperialism, and national liberation in their development from Marx and Engels to Lenin, Khrushchev, and Mao-Tse-tung. (Spring—evening.)
- 227 **Seminar: the Politics of Eastern Europe (3)** Maday  
Comparative study of the principal political, social, and economic characteristics of the area; analysis of the events since World War II: the Soviet stake in the area; patterns of Soviet domination; efforts toward economic and political integration; the impact of the Sino-Soviet dispute; U. S. policy toward the satellite nations. (Fall—evening.)
- 230 **Seminar: Operational Techniques of International Communism (3)** Metzl  
Strategy and tactics of the international Communist movement in the post-Stalin period, with emphasis on the modus operandi of Communist parties, international and national Communist front organizations, and Sino-Soviet Bloc agencies in the free world. Prerequisite: a general understanding of Communist ideology and of the workings of political movements. (Fall—evening.)
- 231 **Seminar: Sino-Soviet Relations (3)** Michael  
A discussion of the background, development, and status of the conflict within the Communist movement, with special emphasis on the role of the Chinese Communists in the dispute. (Fall—day.)
- 232 **Seminar: International Communication—the Sino-Soviet Orbit (3)** Karch  
History and theory of communication, image factors—structure and national character, communication within the Communist orbit with emphasis on media, "socialist orbit" communication to the free world; Western communication to the orbit, including VOA and BBC. (Spring—evening.)
- 233 **Seminar: Soviet Government and Politics (3)**  
An analysis of the theoretical and historical bases of the Soviet political system, and the socioeconomic setting of its formation; the nature and role of the Party, government, and mass organizations, and selected problems of domestic and foreign policy. (Fall—evening.)
- 234 **Seminar: Soviet Internal Policy (3)** Block  
An examination of (1) how Soviet organization and administration and Soviet policies in social and economic, nationality and military matters have been influenced by revolutionary ideas, by traditions, and by accidental events; (2) how the leaders have applied these policies to maintain their power and to transfer man, society, and nature according to their lights. (Spring—evening.)

**236 Seminar: Trade Unions and Mass Activism in the Soviet System (3)**

An examination of the theory and practice of mass participation in Soviet legislative, administrative, and judicial activities, with particular attention to current developments in the "transition to Communism." The principal case-study will be the trade-union organization as an agency for mass activism in the promotion of economic and social discipline. Other forms of mass participation, such as the Soviets, comradesly courts, and people's militia, will also be considered. Not offered 1965-66.

**237 Chinese Law \* (3)**

Lee

A short survey of the history of Chinese law and its social background; Western impact on Chinese law toward the end of the Manchu Dynasty; legal concepts and institutions of the Chinese Republic from 1912 until the communist take-over in 1949. The philosophy and development of the communist legal system from the Kiangsi-Yenan period to the present. (Fall—evening.)

**238 Soviet Law † (3)**

Ramundo

Concept of "socialist legality"; impact of Soviet legal system upon the individual in his relationship with the state and other participants in Soviet society; role of Communist Party in the institutional framework of the Soviet legal system; Soviet philosophy of law; state (constitutional) law including Soviet federalism, governmental apparatus, and rights and obligations of citizenship; criminal law, including economic crimes, role of social and public organizations in administration of justice, and concept of "administrative" punishment. (Spring—evening.)

**253 Seminar: Chinese Government and Politics (3)**

Michael

A discussion of the political institutions and concepts in late imperial times, during the period of the revolution, under the national government, and under the communists. The main emphasis of the seminar will be on the communist period. (Spring—evening.)

**254 Interuniversity Research Colloquium on Modern China (3)**

A colloquium of faculty members of the Institute for Sino-Soviet Studies of The George Washington University, American University, Howard University, and the University of Maryland who represent different disciplines and are concerned with applying their disciplinary work to the study of modern China. The members' research plans and studies in progress are critically discussed in weekly sessions. Advanced graduate students are admitted with the permission of the faculty group. (Academic year—day.)

**256 Seminar: the Politics of North Korea and North Vietnam (3)**

Han

An assessment of the positions of North Korea and North Vietnam between the Soviet Union and Communist China; history and issues of the Sino-Soviet dispute as related to the Asian satellites; the roles of Moscow and Peking in the creation of these two satellites, the techniques applied in the power take-over and the character of leadership. Internal and external developments of these two regimes will be related to the issues involved in the Sino-Soviet dispute; factors and motives which impel leading communist leaders in North Korea and North Vietnam to support one or the other of the two major communist powers will be examined. (Spring—evening.)

\* Same as Law 474 (2). Graduate students registering for Political Science 237 make special arrangements with the instructor for supplementary assignments equivalent to one additional semester hour.

† Same as Law 473 (2). Graduate students registering for Political Science 238 make special arrangements with the instructor for supplementary assignments equivalent to one additional semester hour.



257 **Seminar: Communism in Developing Countries (3)** Thornton

An examination of international Communist policy for, and Communist Parties in, developing countries. Case studies will be made of selected states of Asia, Africa, and Latin America. Attention will be given to basic Communist concepts of imperialism and nationalism, and to the development and current application of Soviet and Chinese variants of strategy and tactics for "national liberation." (Spring—evening.)

269 **Seminar: Soviet Foreign Policy (3)** Larson

The external policies and relations of the USSR; world objectives of the Soviet leaders; diplomacy in relations with other communist states, with the Western powers, and with other countries; international propaganda, disarmament policy, and foreign economic relations. (Fall—evening.)

270 **Seminar: the Soviet Foreign Policy Process (3)** Metzl

An investigation of the functioning of instruments used to implement Soviet foreign policy as they affect specific policy objectives and international political situations. The activities of the Soviet diplomatic apparatus, its negotiation techniques, its modus operandi in the economic, cultural, and trade fields. An investigation of areas of international communism, Soviet and communist fronts, and espionage, toward a fuller understanding of the wide range of Soviet mechanisms deployed abroad to serve foreign policy objectives. (Spring—evening.)

288 **Seminar: Soviet Military Policy and Strategy (3)** Wolfe

Soviet developments in the area of military policy and strategy with some attention to questions of intra-Bloc military cooperation; political context within which Soviet military policy is formulated; significant changes in recent Soviet military thought. (Fall—evening.)

295 **Seminar: China in the Communist Bloc (3)** Hinton

An introduction to methods and bibliography; history of the Chinese Communist movement; ideology and political dynamics; economic and military policy; foreign policy and relations. (Spring—evening.)

296 **Seminar: the Communist Bloc in Far Eastern International Politics (3)** Hinton

The Communist strategy for Asia; Stalin's Far Eastern policy; growth of local Communist movements; impact of World War II; Soviet post-war policy in Asia; victory in China; the Korean and Indochinese wars; armed struggle in South and Southeast Asia; wooing of the national bourgeoisie; development of the Asian communist states; local communist parties since World War II; Sino-Soviet rivalry. (Fall—evening.)

## PSYCHOLOGY

259 **Seminar: Social Psychology of Communism (3)** White

Psychological aspects of authoritarian systems and of all-embracing political ideologies, methods and findings in the study of public opinion in the USSR and its satellites; problems of Western communications with the USSR; the nature of Communist propaganda and the appeals of Communism in non-Communist countries. (Fall—evening.)

## SLAVIC AND ORIENTAL LANGUAGES AND LITERATURES

161-62 **Russian Culture (3-3)** Olkhovsky

A survey of Russian cultural heritage from the origins of ancient Russia to the present. Lecture, recitation, discussion, and individual reports on assigned topics. This course may be taken for graduate credit with the approval of the instructor. (Academic year—evening.)



165 **Soviet Literature (3)**

Popluiko

A survey of major literary figures, literary movements, and literary styles. Revolution and its impact on writers. The theme of the Civil War in literature. The place of the Soviet intelligentsia in Soviet society, revival of the psychological novel, social realism, and government control of literature. This course may be taken for graduate credit with the approval of the instructor. (Fall—evening.)

**COURSES OFFERED IN SPECIAL PROGRAM ON COMMUNIST AFFAIRS—SUMMER 1965**

Political Science 160, *Theory and Practice of Communism (3)*

Political Science 161, *Soviet Government and Politics (3)*

Political Science 162, *Communist Chinese Government and Politics (3)*

**International Affairs\***

*Professors* J. W. Brewer, H. M. Merriman, R. D. Campbell, R. H. Davison, W. H. Kraus, W. C. Davis, R. B. Thompson, Wilson Schmidt, C. E. Galbreath, W. L. Tayler, K. L. London, J. L. B. Atkinson, H. M. Stout (*Chairman*), J. N. Mosél, W. C. Hopkins, Franz Michael, R. E. Purcell (*Visiting*), Joseph Aschheim, J. A. Brown, Jr., R. K. White, Herman Walker, Jr.

*Professorial Lecturers* R. L. Garthoff, Lothar Metzl, V. P. Petrov, T. W. Wolfe, J. J. Karch, Herbert Block, P. W. Han, Thomas Larson, B. C. Maday

*Associate Professors* Benjamin Nimer, J. T. Davis, H. R. Ludden, R. S. Jordan, George Stambuk, G. D. Overstreet, R. G. Boyd (*Visiting*), H. C. Hinton

*Associate Professorial Lecturers* Warren Eitler, T. P. Thornton

*Assistant Professors* P. F. Gallagher, P. P. Hill, J. K. McDonald, Michael Gasster, Willard Overgaard, G. A. Olkhovsky, Nadine Popluiko, Bernard Reich

*Assistant Professorial Lecturers* Bernard Ramundo, Paul Gekker, L. T. Lee

Bachelor of Arts in Government or Master of Arts in Government in the field of *International Affairs*.—See pages 113–15, 121–22, 123–26, 131–32, 132–34.

American Thought and Civilization 101 *American Civilization* is recommended as a senior year elective for Bachelor of Arts in Government majors in *International Affairs*.

*Master of Science in International Affairs (War College Programs)*.—See the College of General Studies Catalogue.

The International Affairs programs are interdisciplinary in concept and interdepartmental in structure. Programs being developed are: Comparative Institutions and Cultures, Political and Economic Development, International Politics, Law and Organization, National Security, Sino-Soviet Studies. The courses listed below are an indication of the range of elective courses available. For course descriptions see the departmental announcements concerned.

\* Staff of Instruction for the academic year 1964–65

## GENERAL

- Anthropology 161 *Language and Culture* (3)  
 Anthropology 263 *Culture Contact and Change* (3)  
 Economics 181-82 *International Economics* (3-3)  
 Economics 246 *Foreign Labor Movements* (3)  
 Economics 251-52 *Economic Development* (3-3)  
 Economics 281-82 *International Economics* (3-3)  
 Economics 284 *United States Foreign Economic Policy* (3)  
 Economics 290 *Seminar: International Economics* (3)  
 Geography 52 *World Regions* (3)  
 Geography 126 *World Economies* (3)  
 Geography 127 *World Population and Settlement* (3)  
 Geography 145 *Psychological Geography* (3)  
 Geography 146 *World Political Geography* (3)  
 Geography 241-42 *Seminar: Place and Culture* (3-3)  
 Geography 253-54 *Seminar: Problems of Developing Nations* (3-3)  
 History 181-82 *Diplomatic History of the United States* (3-3)  
 History 183 *Oversea Expansion of the United States* (3)  
 History 184 *Canada and the United States* (3)  
 History 281-82 *Seminar: Diplomatic History of the United States* (3-3)  
 History 381-82 *Reading Course in American Diplomatic History* (3-3)  
 International Affairs 260 *Fundamentals of National Power* \* (3)  
 International Affairs 261 *International and United States Foreign Policy* \* (3)  
 International Affairs 262 *National Security Policy of the United States* \* (3)  
 International Affairs 297 *Readings in International Affairs* \* (1 to 2)  
 International Affairs 299-300 *Thesis* \* (3-3)  
 Political Science 111 *Introduction to Comparative Government and Politics* (3)  
 Political Science 112 *Introduction to Comparative Government and Politics* † (3)  
 Political Science 117-18 *Political Theory: the Nature and Growth of Political Thought in the West* (3-3)  
 Political Science 171 *International Politics* (3)  
 Political Science 172 *Organization and Function of the United Nations* (3)  
 Political Science 181-82 *Survey of Public International Law and Organization* (3-3)  
 Political Science 187-88 *Current Problems in International Politics* (1-1)  
 Political Science 197 *Proseminar: International Affairs—Strategies of Contemporary American Foreign Policy* (3)  
 Political Science 211 *Readings in Comparative Government and Politics* (3)  
 Political Science 212 *Seminar: Comparative Government and Politics* (3)  
 Political Science 217 *Seminar: Topics in Political Theory* (3)  
 Political Science 218 *Reading Course in Political Theory* (3)  
 Political Science 271-72 *Problems in International Organization* (3-3)  
 Political Science 273 *Public Opinion and Foreign Policy* (3)

\* Offered in War College programs only

† This course may be required of students inadequately prepared for graduate work in the Institute for Sino-Soviet Studies

Political Science 275-76 *Problems in International Politics* (3-3)  
 Political Science 281-82 *Seminar: Public International Law* (3-3)  
 Political Science 283 *Topics in International Law* \* (3)  
 Political Science 285 *Diplomacy Since World War II* \* (3)  
 Psychology 156 *Psychology of Propaganda and Public Opinion* (3)  
 Psychology 262 *Behavioral Factors in Social Change* (3)  
 Sociology 144 *Mass Communications* (3)  
 Sociology 226 *Problems of Underdeveloped Areas* (3)  
 Sociology 241 *Population Problems* (3)

#### AFRICA

Geography 155 *Africa* (3)  
 Political Science 192 *Governments and Politics of North Africa* (3)

#### FAR EAST

Geography 165 *Eastern and Southeastern Asia* † (3)  
 History 187 *History of Modern China* † (3)  
 History 189 *History of India* † (3)  
 History 190 *Modern India* † (3)  
 History 195-96 *History of East Asia* † (3-3)  
 Political Science 101 *The Far East in the Modern World* † (3)  
 Political Science 194 *Governments of China and Japan* † (3)  
 Political Science 254 *Interuniversity Research Colloquium on Modern China* (3)  
 Political Science 293 *Seminar: Governments and Politics of South and Southeast Asia* (3)

#### LATIN AMERICA

Economics 185-86 *Economic History and Problems of Latin America* (3-3)  
 Economics 285-86 *Economic Development of Latin America* (3-3)  
 Geography 161 *Latin America* (3)  
 History 163 *Colonial Latin America* (3)  
 History 164 *South America since Independence* (3)  
 History 166 *Mexico and the Caribbean since Independence* (3)  
 History 261-62 *Seminar: Latin American History* (3-3)  
 History 266 *Reading Seminar: Contemporary Latin America* (3)  
 Political Science 177 *Recent Trends in Latin American Politics and Government* (3)  
 Political Science 178 *International Politics in the Western Hemisphere* (3)  
 Political Science 277 *Seminar: Latin American Government* (3)  
 Political Science 278 *Seminar: Latin American Political Philosophy* (3)

#### MIDDLE EAST

Geography 156 *The Middle East* (3)  
 History 193 *History of the Near East* (3)  
 History 293 *Seminar: History of the Modern Near East* (3)  
 Political Science 191 *Governments and Politics of the Middle East* (3)

\* Offered in War College programs only.

† This course may be required of students inadequately prepared for graduate work in the Institute for Sino-Soviet Studies



Political Science 292 *Governments and Politics of North Africa* (3)

## SINO-SOVIET

Economics 133 *The Economy of the Soviet Union* \* (3)

Economics 267 *The Soviet Economy* (3)

Education 281 *Seminar: the Educational System of the Soviet Union* (3)

Education 282 *Seminar: the Educational System of Communist China* (3)

Geography 164 *Communist China* \* (3)

Geography 166 *The Soviet Union* \* (3)

Geography 265 *Seminar: Geography of the Soviet Union* (3)

Geography 266 *Seminar: Geography of China* (3)

History 145-46 *History of Russia* \* (3-3)

History 244 *History of the Comintern* (3)

History 245 *Seminar: Russian History* (3)

History 295-96 *Seminar: History of the Modern Far East* (3-3)

History 346 *Reading Course in Russian History* (3)

Political Science 101 *The Far East in the Modern World* \* (3)

Political Science 107 *Problems in Modern Political Thought* \* (3)

Political Science 193 *Governments and Politics of South and Southeast Asia* \* (3)

Political Science 194 *Governments of China and Japan* \* (3)

Political Science 215-16 *Seminar: the Sino-Soviet Blocs in World Affairs I-II* (3-3)

Political Science 224 *Readings in Socialism and Communism* (3)

Political Science 225 *Seminar: Theoretical Problems of Marxism-Leninism* (3)

Political Science 227 *Seminar: the Politics of Eastern Europe* (3)

Political Science 230 *Seminar: Operational Techniques of International Communism* (3)

Political Science 231 *Seminar: Sino-Soviet Relations* (3)

Political Science 232 *Seminar: International Communism—the Sino-Soviet Orbit* (3)

Political Science 233 *Seminar: Soviet Government and Politics* (3)

Political Science 234 *Seminar: Soviet Internal Policy* (3)

Political Science 236 *Seminar: Trade Unions and Mass Activism in the Soviet System* (3)

Political Science 237 *Chinese Law* † (3)

Political Science 238 *Soviet Law* ‡ (3)

Political Science 253 *Seminar: Chinese Government and Politics* (3)

Political Science 256 *Seminar: the Politics of North Korea and North Vietnam* (3)

Political Science 257 *Seminar: Communism in Developing Countries* (3)

Political Science 269 *Seminar: Soviet Foreign Policy* (3)

Political Science 270 *Seminar: the Soviet Foreign Policy Process* (3)

Political Science 288 *Seminar: Soviet Military Policy and Strategy* (3)

\* This course may be required of students inadequately prepared for graduate work in the Institute for Sino-Soviet Studies.

† Same as Law 474 (2). Graduate students registering for Political Science 237 make special arrangements with the instructor for supplementary assignments equivalent to one additional semester hour.

‡ Same as Law 473 (2). Graduate students registering for Political Science 238 make special arrangements with the instructor for supplementary assignments equivalent to one additional semester hour.

Political Science 295 *Seminar: China in the Communist Bloc* (3)  
 Political Science 296 *Seminar: the Communist Bloc in Far Eastern International Politics* (3)  
 Psychology 151 *Social Psychology* \* (3)  
 Psychology 259 *Seminar: Social Psychology of Communism* (3)  
 Slavic and Oriental Languages and Literatures 161-62 *Russian Culture* \* (3-3)  
 Slavic and Oriental Languages and Literatures 165 *Soviet Literature* \* (3)

## WESTERN EUROPE

Geography 153 *Western Europe* (3)  
 Geography 154 *The Mediterranean* (3)  
 History 141-42 *History of France* (3-3)  
 History 149-50 *European Diplomatic History* (3-3)  
 History 241-42 *Seminar: Modern European History* (3-3)  
 History 249 *Seminar: European Diplomatic History* (3)  
 Political Science 113 *Political Problems of the British Commonwealth of Nations* (3)

## Italian

See "Romance Languages and Literatures."

## Journalism†

Professor R. P. Schlabach, Jr.

Professorial Lecturer Daniel Gottlieb

Associate Professor R. C. Willson (*Acting Chairman*)

Associate Professorial Lecturers H. L. Coppenbarger, J. E. Eisen

Assistant Professorial Lecturers F. L. Dennis, J. V. Hinkel, T. R. Smith

*Bachelor of Arts with a major in Journalism (Departmental).*—Prerequisite: the Arts and Letters curriculum, page 57, including English 51-52 or 71-72. History 71-72, Political Science 9-10, and Journalism 71-72.

Required:

(1) The general requirements, pages 63-67.

(2) Twenty-four hours of second group courses in Journalism, as follows: (a) Journalism 111, 196, 198; (b) nine hours chosen from Journalism 121, 133, 137, 139, 151; (c) six hours chosen from Journalism 115, 116, 140, 145, 146.

(3) Twelve hours of second-group courses, chosen in consultation with the major adviser, in one other department of Columbian College of Arts and Sciences. Students selecting science may take courses in more than one department.

American Thought and Civilization 101 *American Civilization* is recommended as a senior-year elective for Journalism majors.

*First Group 71-72 Journalism in American Society* (3-3)

Willson

Evolution of newspapers and other media in relation to political, social, and economic life; the concept of press freedom; problems of contemporary

\* This course may be required of students inadequately prepared for graduate work in the Institute for Sino-Soviet Studies.

† Staff of Instruction for the academic year 1964-65.

journalism—with special emphasis on press-government relations. (Academic year—day and evening.)

- 111 **Reporting (3)** Coppenbarger *Second Group*  
Instruction and classroom practice in gathering, evaluating, and writing news; emphasis on newspapers, other media considered. (Fall—day; spring—evening.)
- 115 **Editing and Make-up (3)** Coppenbarger  
Editing of news and other material for publication, typography and display; use of pictures and other graphic presentations. (Not offered 1965–66.)
- 116 **Editing Magazines and Specialized Publications (3)**  
Layout, typography, and design for magazines, newsletters, house organs, and similar publications for associations, institutions, and industry. (Spring—evening.)
- 121 **Feature Writing (3)** Willson  
Instruction and practice in writing magazine articles, material for which is obtained through independent investigation. (Fall—evening.)
- 133 **Advanced Reporting: Community News (3)** Eisen  
Instruction and practice in coverage and writing of local news. (Spring—day.)
- 137 **Advanced Reporting: National Affairs (3)** Gottlieb  
Instruction and practice in coverage and writing of federal government news from the point of view of the press association. (Fall—evening.)
- 139 **Advanced Reporting: Radio and Television News (3)**  
Instruction and practice in preparing news and public affairs programs for the broadcast media. (Not offered 1965–66.)
- 140 **Photojournalism (3)** Smith  
Photographic techniques affecting publication, the illustration and the story angle, standards of judgment in selection and use of pictures, captions, editing technique, cropping for effective reproduction. (Spring—evening.)
- 145 **Principles and Problems of Public Relations (3)** Berg\*  
Principles, problems, and ethics of public relations for government agencies, commercial establishments, educational and other public institutions. Case histories of successful programs. (Fall—evening.)
- 146 **Government Information (3)**  
The growth of information activities in government and the role of the information specialist. Instruction and practice in writing and editing for government information operations. (Not offered 1965–66.)
- 151 **Editorial Writing (3)**  
Instruction and practice in writing of editorials on public affairs. (Not offered 1965–66.)
- 196 **Seminar (3)** Willson  
For journalism majors only. Research in areas relating journalism to secondary fields of study. (Spring—as arranged.)
- 198 **Law of the Press (3)** Dennis  
Freedom of the press, censorship, legislative controls, publications as contempt of court, copyright, news gathering agencies, labor law and the newspaper business, law of libel, privileged matter, fair comment on public characters, right of privacy. (Fall—evening.)

\* Appointment effective September 1965.



## Latin

See "Classical Languages and Literatures."

## Linguistics—Graduate Study

### COMMITTEE ON LINGUISTIC STUDY

J. G. Allee, Jr. (*Chairman*), W. G. Clubb, Frances Henry, J. C. King, G. E. McSpadden, N. D. Nelson, D. E. Walker, Jr.

Columbia College offers an interdepartmental Master of Arts field in Linguistics, which is directed by the Department of Germanic Languages and Literatures and the Department of Romance Languages and Literatures. Interested students should consult the Chairman of the Committee on Linguistic Study and the Chairman of the department concerned. Occasionally a student is accepted with an undergraduate major in a language other than French, German, Italian, Portuguese, Russian, or Spanish.

For information concerning work toward the degree of Doctor of Philosophy, see the Graduate Council, pages 75–84.

There is no undergraduate major in the field of Linguistics.

The candidate's program will normally be selected from the following courses:

### ANTHROPOLOGY

- |     |  |           |
|-----|--|-----------|
| 161 | <i>Language and Culture</i> (3)        | Gallagher |
| 162 | <i>Linguistics in Anthropology</i> (3) | Walker    |
| 193 | <i>Anthropological Methods</i> (3)     | Walker    |

### ENGLISH

- |        |  |       |
|--------|--|-------|
| 125    | <i>Introduction to English Linguistics</i> (3) | Allee |
| 223–24 | <i>Old English</i> (3–3)                       | Allee |

### GERMANIC LANGUAGES AND LITERATURES

- |        |   |             |
|--------|---|-------------|
| 201–2  | <i>Middle High German</i> (3–3)                                 | Legner      |
| 205–6  | <i>Gothic</i> (3–3)   | Legner      |
| 209–10 | <i>Old High German</i> (3–3)                                    | King        |
| 213–14 | <i>Old Norse</i> (3–3)  | Allee       |
| 223–24 | <i>Linguistic Analysis of Modern German</i> (3–3)               | King        |
| 225–26 | <i>Seminar: Linguistics</i> (3–3)                               | King, Allee |
| 227–28 | <i>Sanskrit—Introduction to Indo-European Linguistics</i> (3–3) | King        |

## MATHEMATICS

- |       |   |           |
|-------|---|-----------|
| 101   | <i>Introduction to Mathematical Logic</i> (3) | Nelson    |
| 122   | <i>Introduction to Abstract Algebra</i> (3)   | The Staff |
| 124   | <i>Introduction to Matrix Theory</i> (3)      | The Staff |
| 201-2 | <i>Mathematical Logic</i> (3-3)               | Nelson    |

## PHILOSOPHY

- |     |                                   |          |
|-----|-----------------------------------|----------|
| 196 | <i>Philosophy of Language</i> (3) | Schlagel |
|-----|-----------------------------------|----------|

## PSYCHOLOGY

- |     |   |       |
|-----|---|-------|
| 115 | <i>Psychology of Language and Communication</i> (3) | Mosél |
|-----|---|-------|

## ROMANCE LANGUAGES AND LITERATURES

### FRENCH

- |        |   |          |
|--------|---|----------|
| 103    | <i>Problems of Pronunciation and Intonation</i> (3) | Vigneras |
| 212    | <i>Historical French Grammar</i> (3)                | Vigneras |
| 213-14 | <i>Old French</i> (3-3)                             | Vigneras |

### SPANISH

- |     |   |           |
|-----|---|-----------|
| 103 | <i>Problems of Pronunciation and Intonation</i> (3) | McSpadden |
| 212 | <i>Historical Spanish Grammar</i> (3)               | McSpadden |
| 214 | <i>Old Spanish</i> (3)                              | McSpadden |

### GENERAL COURSES IN ROMANCE LANGUAGES AND LITERATURES

- |     |  |           |
|-----|--|-----------|
| 270 | <i>Experimental Phonetics</i> (3)                            | McSpadden |
| 279 | <i>Introduction to Romance Philology and Linguistics</i> (3) | McSpadden |

## SLAVIC AND ORIENTAL LANGUAGES AND LITERATURES

- |     |   |       |
|-----|---|-------|
| 125 | <i>Russian Linguistic Structure</i> (3)                     | Child |
| 126 | <i>Comparative Russian-English Linguistic Structure</i> (3) | Child |

## SPEECH AND DRAMA

- |     |   |       |
|-----|---|-------|
| 279 | <i>Anatomy and Physiology of Speech and Hearing</i> (3) | Henry |
| 280 | <i>Neurophysiology of Communication</i> (3)             | Henry |
| 284 | <i>Dynamic Phonetics</i> (3)                            | Henry |

## STATISTICS

- |        |   |          |
|--------|---|----------|
| 261-62 | <i>Information Theory for Engineers</i> (3-3) | Kullback |
| 271-72 | <i>Statistical Information Theory</i> (3-3)   | Kullback |

## Mathematics\*

*Professors* Florence Mears, N. D. Nelson (*Chairman*), T. P. G. Liverman, N. A. Wiegmann

*Professorial Lecturers* W. H. Marlow, D. M. Dribin, Thomas Saaty

*Associate Professors* W. A. Smith, Hewitt Kenyon, Ludvik Janos (*Visiting*), L. M. Court (*Visiting*)

*Associate Professorial Lecturers* Joseph Blum, J. A. Simmons

*Assistant Professors* Geza Schay, Paul Sadagursky, Vaclav Pfeffer

*Assistant Professorial Lecturers* Mabel Morris, A. J. Ziffer, C. H. Koerner

*Bachelor of Arts or Bachelor of Science with a major in Mathematics (Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, page 57.

Required: in addition to the general requirements, pages 63–67, twenty-four semester hours of Mathematics of approved second- and third-group courses.

*Master of Arts or Master of Science in the field of Mathematics.*—Prerequisite: a Bachelor of Arts or Bachelor of Science degree, respectively, with a major in Mathematics at this University, or the equivalent.

Required: the general requirements, pages 69–71.

*Master of Arts in the field of Linguistics.*—See pages 258–59 and the departments of Germanic Languages and Literatures and Romance Languages and Literatures.

*Doctor of Philosophy.*—See pages 75–84.

*Bachelor of Arts in Education with a teaching field in Mathematics.*—Prerequisite: the Education curriculum, page 59.

Required: the Mathematics option and the professional courses listed on page 99.

### First Group 3 College Algebra (3)

The Staff

Exponents and logarithms, linear equations; complex numbers; quadratic equations; introduction to theory of equations; mathematical induction and the binomial theorem, permutations, combinations, and probability, determinants; progressions. Prerequisite: one year each of high school algebra and high school geometry. (Fall and spring—day and evening; summer 1965.)

### 6 Plane Trigonometry (3)

The Staff

Prerequisite: two years of high school algebra and one year of high school geometry, or Mathematics 3 (or concurrent registration therefor). (Fall and spring—day and evening; summer 1965.)

### 9 General Mathematics I (3)

The Staff

For those students in the School of Education or others electing Mathematics 9 and 10 as a terminal sequence in mathematics. Propositional logic and truth values, the number system, number bases, arithmetical computation; algebraic functions, topics from plane geometry. Prerequisite: two years of high school mathematics. Not open to students who have had former Mathematics 2. (Fall and spring—day and evening; summer 1965.)

### 10 General Mathematics II (3)

The Staff

An introduction to matrices and vector spaces; non-Euclidean geometry; introduction to concepts of the calculus. Prerequisite: Mathematics 9 or former 2. (Fall—evening; spring—day and evening; summer 1965.)

\* Staff of Instruction for the academic year 1964–65.

New students registering for Mathematics 3, 6, 9, 15, 21, or 27 are required to take a placement examination.



- 15 **Finite Mathematics I (3)** The Staff  
Truth value connectives and switching circuits, partitions and counting, probability theory. Prerequisite: two years of high school mathematics. (Fall—day and evening; spring—evening; summer 1965.)
- 16 **Finite Mathematics II (3)** The Staff  
Vectors and matrices, mathematics of finance and accounting, linear programming, introduction to game theory. Prerequisite: Mathematics 15. (Spring—day and evening; summer 1965.)
- 21 **Calculus I (3)** The Staff  
Elementary concepts of analytic geometry. Differentiation and integration of algebraic functions with applications. Prerequisite: Mathematics 3 and 6; or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry; or the equivalent. (Fall and spring—day and evening; summer 1965.)
- 22 **Calculus II (3)** The Staff  
Differentiation and integration of transcendental functions and applications, topics in analytic geometry, techniques of integration. Prerequisite: Mathematics 21. (Fall and spring—day and evening; summer 1965.)
- 23 **Calculus III (3)** The Staff  
Vector concepts, improper integrals, polar coordinates, and infinite series. Prerequisite: Mathematics 22. (Fall and spring—day and evening; summer 1965.)
- 24 **Calculus IV (3)** The Staff  
Multiple integration and partial differentiation with applications, vectors and solid geometry, differential equations. Prerequisite: Mathematics 23. (Fall and spring—day and evening; summer 1965.)
- 27 **Calculus I and II (6)** The Staff  
The equivalent of Mathematics 21 and 22. (Fall—day.)
- 28 **Calculus III and IV (6)** The Staff  
The equivalent of Mathematics 23 and 24. (Spring—day.)
- 101 **Introduction to Mathematical Logic (3)** Nelson *Second Group \**  
Development of propositional and predicate calculi, basic semantic concepts, elementary intuitive set theory, Boolean algebra. Prerequisite: Mathematics 24 or former 31, or Philosophy 121. (Fall—evening.)
- 102 **Fundamental Concepts of Mathematics (3)** Nelson  
Axiomatic set theory, cardinal and ordinal arithmetic, foundations of the real number system. Prerequisite: Mathematics 101 or permission of the instructor. (Spring—evening.)
- 106 **Introduction to Topology (3)** Kenyon  
Prerequisite: Mathematics 122 or permission of the instructor. (Spring—evening.)
- 111 **Mathematics for Engineers and Physicists I (3)** The Staff  
Differential equations, linear algebra. (Fall and spring—day and evening; summer 1965.)
- 112 **Mathematics for Engineers and Physicists II (3)** The Staff  
Fourier series, Laplace transformation, partial differential equations. Pre-

\* Mathematics 24 or former 31 is prerequisite to all second-group courses. Exception to this regulation may be made for Mathematics 101, 122, and 124. Students anticipating a substantial concentration in mathematics should consult with the Department about early completion of these courses.

requisite: Mathematics 111 or former 132. (Fall and spring—day and evening; summer 1965.)

120 **Introduction to Theory of Numbers** (3) The Staff  
(Fall—evening.)

122 **Introduction to Abstract Algebra** (3) The Staff  
(Fall—evening; spring—day; summer 1965.)

124 **Introduction to Matrix Theory** (3) The Staff  
Elementary theory of finite vector spaces, determinants, equivalence, matrices with polynomial elements, similarity of matrices. (Fall—day; spring—evening; summer 1965.)

127 **Foundations of Geometry** (3) Nelson  
Alternative postulational developments of Euclidean geometry. Non-Euclidean geometries. (1966–67 and alternate years.)

134 **Introduction to Boundary Value Problems** (3) The Staff  
Prerequisite: Mathematics 111 or former 132, or 142. (Spring—day.)

135 **Projective Geometry** (3) The Staff  
(Fall—evening.)

139 **Advanced Calculus I** (3) The Staff  
Limits, continuity, real number system, mean value theorems, partial differentiation, implicit function theorems, transformations, and mappings. (Fall—evening; spring—day; summer 1965.)

140 **Advanced Calculus II** (3) The Staff  
Vector fields, multiple integrals, line and surface integrals, point set theory, theory of integration, improper integrals. Prerequisite: Mathematics 139. (Spring—evening; summer 1965.)

141 **Introduction to Infinite Series** (3) Mears  
(1966–67 and alternate years.)

142 **Theory of Differential Equations** (3) The Staff  
Prerequisite: Mathematics 139. (Fall—day; summer 1965.)

153 **Introduction to Numerical Analysis** (3) Marlow  
(Fall—evening.)

157 **Introduction to Complex Variable Theory** (3) The Staff  
(Fall—evening.)

*Third Group* 201–2 **Mathematical Logic** (3–3) Nelson  
(Academic year—evening.)

220 **Theory of Numbers** (3)  
(Not offered 1965–66.)

237–38 **Theory of Functions of a Complex Variable** (3–3) The Staff  
A year course: credit is not given for the first half until the second half is completed. (Academic year—evening.)

242 **Infinite Series** (3) Mears  
(1966–67 and alternate years.)

243–44 **Numerical Analysis** (3–3) Marlow  
(Academic year—evening.)

249 **Ordinary Differential Equations** (3) The Staff  
(1966–67 and alternate years.)

262 MATHEMATICS

- |        |   |           |
|--------|---|-----------|
| 251-52 | <b>Theory of Functions of a Real Variable (3-3)</b><br>(1966-67 and alternate years.)   | The Staff |
| 253-54 | <b>Topics in Nonlinear Mathematics (3-3)</b><br>(Not offered 1965-66.)  | Saaty     |
| 255    | <b>Differential Geometry (3)</b><br>(Fall—evening.)   | Schay     |
| 256    | <b>Introduction to Algebraic Geometry (3)</b><br>(Not offered 1965-66.)   | Dribin    |
| 257    | <b>Lie Groups (3)</b><br>(Fall—evening.)  | Schay     |
| 258    | <b>Group Representations (3)</b><br>(Spring—evening.)   | Janos     |
| 261    | <b>Generalized Functions and Operational Methods (3)</b><br>Theory of generalized functions in one variable. Operational calculus of generalized functions. Applications to differential equations and Fourier analysis. Prerequisite: Mathematics 140. (Fall—evening.)   | Liverman  |
| 262    | <b>Advanced Operational Methods (3)</b><br>Generalized functions on test spaces of analytic functions. Operational calculus in several variables. Applications to partial differential and convolution equations of applied mathematics. Prerequisite: Mathematics 261. (Spring—evening.)                                   | Liverman  |
| 265-66 | <b>Modern Algebra (3-3)</b><br>Fundamental concepts of theory of groups, rings, and fields. Theory of finite fields, extension fields, Galois groups, factorization theory in Gaussian domains, and groups with operators. (Academic year—evening.)   | Wiegmann  |
| 267    | <b>Topics in Matrix Theory (3)</b><br>Theory of linear transformations (vector spaces over a division ring), advanced classical theory, matrix representation of groups and rings, special topics as time allows. Prerequisite: Mathematics 124 and an elementary knowledge of groups, rings, and fields. (Spring—evening.) | Wiegmann  |
| 268    | <b>Calculus of Variations (3)</b><br>(1966-67 and alternate years.)   | Janos     |
| 270    | <b>Tensor Analysis (3)</b><br>(Summer 1965.)  | Schay     |
| 272    | <b>Hilbert Space (3)</b><br>(1966-67 and alternate years.)  |           |
| 277    | <b>Partial Differential Equations (3)</b><br>(1966-67 and alternate years.)   | Schay     |
| 281-82 | <b>General Topology (3-3)</b><br>(1966-67 and alternate years.)   | Kenyon    |
| 287-88 | <b>Functional Analysis (3-3)</b><br>(Academic year—Saturday morning.)   | Saaty     |
| 291-92 | <b>Seminar: Topology (3-3)</b><br>(Academic year—as arranged.)  | Kenyon    |
| 295-96 | <b>Reading and Research (3-3)</b><br>(Academic year—as arranged.)   | The Staff |



(Academic year—as arranged; summer 1965.)

## COURSE OFFERED IN SPECIAL PROGRAM—SUMMER 1965

## 113 Graph Theory (3)

**Microbiology\****Professors* A. M. Griffin, Mary Louise Robbins, R. C. Parlett (*Chairman*)*Associate Professor* Rudolph Hugh*Assistant Professors* Elizabeth O'Hern, Lewis Affronti, Melvin Reich

**Master of Arts or Master of Science in the field of Microbiology.**—Prerequisite: a Bachelor of Arts or a Bachelor of Science degree, respectively, from this University, or the equivalent, with a major in Biology, Botany, Chemistry, or Zoology. The undergraduate program must include the following courses or the equivalent: Biological Sciences 1-2; Chemistry 11-12, 21, 151-52; Mathematics 21, 22 (22 may be taken concurrently with the graduate program); Physics 1-2.

Required: the general requirements, pages 69-71. The thirty semester hours must include (if not presented for admission) Microbiology 211 and 212, 293-94, 299-300 and Biochemistry 221-22. The remaining courses are to be selected from Microbiology 217, 225, 227, 230, 231, 233, and 249-50. The student with much microbiological background may substitute for credit one or more courses from the following: cytology, genetics, cell physiology, entomology, histology, biostatistics, and protozoology. It is not always possible to arrange courses and research so that the student can be assured of completing all required work in one academic year.

*Doctor of Philosophy.*—See pages 75-84.

## 211 Microbiology (4)

The Staff

A lecture and laboratory course. Graduate course on the study of bacteria, fungi, rickettsiae, and viruses. Prerequisite: any biological laboratory science, Chemistry 151-52 (prerequisite for Medical Technology students: Chemistry 21, 22). Laboratory fee, \$16. (Fall—day.)

## 212 Pathogenic Microbiology (4)

The Staff

A lecture and laboratory course. Continuation of 211 with emphasis upon the harmful activities of microorganisms. Prerequisite: Microbiology 211 or the equivalent. Laboratory fee, \$16. (Spring—day.)

## 217 Advanced Mycology (4)

O'Hern

Lecture (2 hours), laboratory (4 hours). Advanced study of the fungi. Lecture and laboratory exercises. Prerequisite: Microbiology 211 or the equivalent. Laboratory fee, \$16. (1965-66 and alternate years: fall—as arranged.)

## 225 Microbial Chemistry and Physiology (3)

Affronti

A lecture course. The biochemical features peculiar to various microorganisms—especially bacteria—are described and are compared with those of the animal cell. Includes discussion of the use of microorganisms in the elucidation of problems in biochemistry. Prerequisite: Biochemistry 221-22 or the equivalent. Microbiology 211 or the equivalent is recommended. (1965-66 and alternate years: fall—as arranged.)

\* Staff of Instruction for the academic year 1964-65.

- 227 **Microbial Pharmacology (2)** Affronti  
A lecture course describing the interactions of drugs and microorganisms—action of drugs on microbes, resistance of microbes to drugs, metabolism of drugs by microbes. Includes discussion of the selective action of drugs toward microbial and animal cells. Prerequisite: Microbiology 225 or permission of the instructor. (1966-67 and alternate years: fall—as arranged.)
- 230 **Statistics and Microbiology (2)** Griffin  
The application of statistical methods to the problems of microbiology. For graduate students. Prerequisite: elementary college algebra. (Spring—as arranged.)
- 231 **Immunology and Immunochemistry (4)** Parlett  
Preparation and testing of serological materials. Demonstration of basic serological phenomena. Prerequisite: Microbiology 211. Laboratory fee, \$16. (1966-67 and alternate years: fall—as arranged.)
- 233 **Virology (4)** Robbins  
Study of viruses and rickettsiae. Lectures and laboratory exercises. For graduate students. Prerequisite: Microbiology 211. Laboratory fee, \$16. (1965-66 and alternate years: fall—as arranged.)
- 235 **Systematic Bacteriology (3)** Hugh  
The history of bacterial classification. International rules of nomenclature as applied to bacteria, development of bacterial classification based upon relationships. Survey of characteristics of bacterial groups. Prerequisite: Microbiology 212 or the equivalent. (1965-66 and alternate years: fall—as arranged.)
- 249-50 **Introduction to Medical Research \* (3-3)** The Staff  
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, \$7.50 a semester. (Academic year—W 1-5 pm.)
- 251 **Diagnostic Bacteriology (2)** Hugh  
Lecture (1 hour), laboratory or field (2 hours). Primarily an elective course for medical students; open to qualified graduate students. Lectures on clinical situations involving bacteriology. Laboratory is mainly demonstration but includes student participation. (Fall—S 9-12 am.)
- 253 **Diagnostic Mycology (2)** O'Hern  
Lecture (1 hour); demonstrations, discussions, or field (2 hours). Primarily an elective course for medical students, open to qualified graduate students. Lectures applicable to clinical problems, class discussion, student presentation of literature in the field, individual or group projects with oral progress reports, field trips to other laboratories. Considerable use of teaching aids. (Fall—S 9-12 am.)
- 255 **Diagnostic Virology (2)** Robbins  
Lecture (1 hour), laboratory (2 hours). Primarily an elective course for medical students, open to qualified graduate students. Parallel to Microbiology 251, with substitution of viruses for bacteria. (Fall—Th 1-4 pm.)
- 257 **Diagnostic Immunology (2)** Parlett, Affronti  
Lecture (1 hour), laboratory (2 hours). Primarily an elective course for medical students, open to qualified graduate students. Lectures supplementing Microbiology 211 and 212, with emphasis on practical immunology frequently encountered in medical situations. Laboratory is primarily dem-

\* An interdepartmental course. The student should register in the department directing his research.

	onstration, using teaching aids. Periodic student discussion. (Fall—Th 1-4 pm.)	
293-94	<b>Staff Seminar (1-1)</b> For graduate students. Bi-weekly throughout the year. —as arranged.)	The Staff (Academic year)
295-96	<b>Research in Microbiology (arr.)</b> (Academic year—as arranged.)	The Staff
299-300	<b>Thesis (3-3)</b>	The Staff

## Music\*

*Associate Professor George Steiner (Chairman)*

*Assistant Professor Robert Parris*

*Assistant Professorial Lecturers John Haskins, William Montgomery*

*Studio Lecturers in Applied Music* N. O. Scribner, Jr., John Stephens, Margaret Tolson, Jule Zabawa, Ervin Klinkon, Mark Thomas, Marian McNabb, Constance McKay, Cecelia Porter, John Mack, Sidney Forrest, Peggy Reinburg

*Bachelor of Arts with a major in (1) Music History and Literature, (2) Music Theory, or (3) Applied Music (Departmental).—Prerequisite: the Arts and Letters curriculum, page 57, or the equivalent, including Music 5-6.*

*Required: in addition to the general requirements, pages 63-67, Music 103-4 and 131-32; a minimum of four semesters in Music Ensemble groups (or evidence of equivalent experience); twenty-four semester hours of second-group courses as follows:*

*1. For the major in Music History and Literature.—Twelve semester hours of Music History and Literature courses, six hours of Applied Music, and six hours of Music Theory courses.*

*2. For the major in Music Theory.—Twelve semester hours of Music Theory courses, six hours of Music History and Literature courses, and six hours of piano (other instrument or voice if departmental requirements for proficiency in piano are met.)*

*3. For the major in Applied Music.—Twelve semester hours of Applied Music in field of specialization and participation in senior recital, six hours of Music Theory courses, and six hours of Music History and Literature courses.*

*Bachelor of Arts in Education with a teaching field in Music.—Prerequisite: the Education curriculum, page 59.*

*Required: the Music option and professional courses listed on page 99.*

## MUSIC HISTORY AND LITERATURE

- First Group* **3 Music Appreciation (3)** Steiner, Haskins, Parris  
An introduction to the historical sequences of musical style, the elements of music, and the media of musical presentation. (Fall and spring—day and evening; summer 1965.)
- 4 Survey of Music Literature and Forms (3)** Steiner, Haskins  
General study of musical forms, structures, and textures as well as the works of the principal composers. (Spring—day and evening; summer 1965.)

\* Staff of Instruction for the academic year 1964-65.



- 103-4 **History of Music (3-3)** Steiner *Second Group*  
The development of music in the Western World from the early Christian Era to the present. (Academic year—day; summer 1965.)
- 105 **Music of the Baroque Period (3)** Parris  
Study of the musical styles, techniques, and literature from 1600 to 1750. (Not offered 1965-66.)
- 106 **Music of the Classic Period (3)** Parris  
Study of styles, techniques, and literature from the 18th century schools through Haydn, Mozart, and Beethoven. (Not offered 1965-66.)
- 107 **Music of the Romantic Period (3)** Haskins  
Study of the musical styles, backgrounds, and literature from Schubert through the 19th century. (Fall—day.)
- 108 **Music of the 20th Century (3)** Steiner  
The principal schools, techniques, developments, and trends of the 20th century. (Spring—day.)
- 109 **Orchestra Literature (3)** Steiner  
Survey of the history and styles of orchestra literature; analysis of representative works. (Not offered 1965-66.)
- 110 **Chamber Music Literature (3)** Steiner  
Survey of the history and styles of chamber music literature; analysis of representative works. (Not offered 1965-66.)
- 121 **The Opera (3)** Haskins  
Survey of the history and styles of opera; analysis of representative works. (Spring—day.)
- 125 **Keyboard Music Literature (3)** Parris  
Survey of the history, style, and major content of the keyboard literature from the 16th century to the present. (Fall—day.)

## MUSIC THEORY

- 1 **Elements of Music (3)** Porter *First Group*  
Notation, scales, keys, intervals, terms, rhythms, ear-training. (Fall and spring—day.)
- 5-6 **Music Theory (3-3)** Parris  
A year course: credit is not given for the first half until the second half is completed. Lecture (3 hours), laboratory (1 hour). Ear-training, sight-singing, melodic and harmonic diction; elementary harmony—triads, inversions, part writing, modulations, figured bass. (Academic year—day.)
- 131-32 **Advanced Music Theory (3-3)** Parris *Second Group*  
A year course: credit is not given for the first half until the second half is completed. Practice in harmonic writing, figured and unfigured bass, secondary and altered chords, nonharmonic tones and extended modulations. Prerequisite: Music 5-6 or the equivalent. (Academic year—day.)
- 135 **Counterpoint (3)** Parris  
The study and practice of early contrapuntal techniques. (Spring—day.)
- 137 **Orchestration (3)** Parris  
Instrumental scoring. (Not offered 1965-66.)
- 138 **Form and Analysis (3)** Parris  
Analysis of musical forms in representative musical literature. (Fall—day.)

**151 Conducting (3)**

**Steiner**

Technique of conducting, score reading, rehearsal procedures, analysis, and interpretation of selected musical literature; practice in conducting. (Fall—day.)

**APPLIED MUSIC**

All Applied Music courses may be repeated for credit. The supplementary fee is waived for full-time music majors.

*First Group*

**11 Piano (1)**

**Tolson, McNabb, McKay, Porter**

Individual lesson (½ hour), required practice (3 hours). Supplementary fee, \$40. (Fall and spring—as arranged; summer 1965.)

**12 Piano (2)**

**Tolson, McNabb, McKay, Porter**

Individual lesson (1 hour), required practice (6 hours). Supplementary fee, \$80. (Fall and spring—as arranged.)

**13 Voice (1)**

**Zabawa**

Individual lesson (½ hour), required practice (3 hours). Supplementary fee, \$40. (Fall and spring—as arranged; summer 1965.)

**14 Voice (2)**

**Zabawa**

Individual lesson (1 hour), required practice (6 hours). Supplementary fee, \$80. (Fall and spring—as arranged.)

**15 Organ (1)**

**Scribner, Reinburg**

Individual lesson (½ hour), required practice (3 hours). Supplementary fee, \$40. (Fall and spring—as arranged; summer 1965.)

**16 Organ (2)**

**Scribner, Reinburg**

Individual lesson (1 hour), required practice (6 hours). Supplementary fee, \$80. (Fall and spring—as arranged.)

**17 Orchestral Instrument (1)**

**The Staff**

Individual lesson (½ hour), required practice (3 hours). Supplementary fee, \$40. (Fall and spring—as arranged; summer 1965.)

**18 Orchestral Instrument (2)**

**The Staff**

Individual lesson (1 hour), required practice (6 hours). Supplementary fee, \$80. (Fall and spring—as arranged.)

**51 Orchestra (1)**

**Steiner**

Preparation and performance of orchestral literature. Prerequisite: audition before Director. (Fall and spring—evening.)

**53 Chorus (1)**

**Zabawa**

Preparation and performance of choral literature. Prerequisite: audition before Director. (Fall and spring—evening.)

*Second Group*

Before admission to second-group courses in Applied Music, the student must demonstrate, in audition, that he meets departmental requirements.

**111 Piano (1)**

**Tolson, Parris, McKay**

Individual lesson (½ hour), required practice (5 hours). Supplementary fee, \$40. (Fall and spring—as arranged; summer 1965.)

**112 Piano (3)**

**Tolson, Parris, McKay**

Individual lesson (1 hour), required practice (10 hours). For music majors only. Supplementary fee, \$80. (Fall and spring—as arranged.)

- 113 **Voice (1)** Zabawa  
Individual lesson (½ hour), required practice (5 hours). Supplementary fee, \$40. (Fall and spring—as arranged; summer 1965.)
- 114 **Voice (3)** Zabawa  
Individual lesson (1 hour), required practice (10 hours). For music majors only. Supplementary fee, \$80. (Fall and spring—as arranged.)
- 115 **Organ (1)** Scribner  
Individual lesson (½ hour), required practice (5 hours). Supplementary fee, \$40. (Fall and spring—as arranged; summer 1965.)
- 116 **Organ (3)** Scribner  
Individual lesson (1 hour), required practice (10 hours). For music majors only. Supplementary fee, \$80. (Fall and spring—as arranged.)
- 117 **Orchestral Instrument (1)** The Staff  
Individual lesson (½ hour), required practice (5 hours). Supplementary fee, \$40. (Fall and spring—as arranged; summer 1965.)
- 118 **Orchestral Instrument (3)** The Staff  
Individual lesson (1 hour), required practice (10 hours). For music majors only. Supplementary fee, \$80. (Fall and spring—as arranged.)

## Pathology\*

*Professors* T. M. Peery (*Chairman*), W. R. Duryee (*Research*), F. N. Miller, Jr., William Newman

*Associate Professor* W. L. Marsh

*Assistant Professors* Lois Platt (*Cytology*), Alexander Breslow, F. S. Jannotta, Gloria Brennan

*Bachelor of Science in Medical Technology*.—Prerequisite: the Medical Technology curriculum, page 58.

Required: the general requirements, page 67, including Microbiology 211 and 212, and the following second-group courses offered in the University Hospital: Pathology 115-16, 117-18, and 119-20.

*Doctor of Philosophy*.—See pages 75-84.

- 115-16 **Introduction to Medical Science (1-1)** Marsh and Staff  
For students in medical technology at the University Hospital. These lectures, based upon physiology, pathology, and medicine, provide a background for the interpretation of laboratory data. (Academic year—1 hour a week.)
- 117-18 **Principles in Medical Technology (4-4)** Marsh and Staff  
For students in medical technology at the University Hospital. Theories, principles, and sources of error of the methods used in clinical chemistry, clinical bacteriology, serology, hematology, and clinical microscopy. (Academic year—4 hours a week.)
- 119-20 **Medical Technology Laboratory (10-10)** Marsh and Staff  
Practice and experience by rotation through the various divisions of the Pathology laboratories of the University Hospital, as follows: hematology and urinalysis, 12 weeks; chemistry, 12 weeks; bacteriology and parasitology, 10 weeks; blood bank, 8 weeks; serology, 4 weeks; tissue pathology, 4 weeks. (30 hours a week for 50 weeks.)

\* Staff of Instruction for the academic year 1964-65.



## Pharmacology\*

*Professors* H. G. Mandel (*Chairman*), Clarke Davison

*Clinical Professor* R. G. Smith

*Professorial Lecturer* B. B. Brodie

*Assistant Professors* V. H. Cohn, Jr., T. M. Farber, Paul Mazel, W. P. Weiss (*Research*), W. R. Jondorf (*Research*), Dezider Gruenberger (*Visiting, Research*)

*Special Lecturer* F. E. Hahn

*Master of Arts or Master of Science in the field of Pharmacology.*—Prerequisite: a Bachelor of Arts or Bachelor of Science degree, respectively. The undergraduate program must include the following courses or the equivalent: Biological Sciences 1-2; Physics, 1-2; Chemistry 11-12, 22, 151-52. One year of calculus and a course in physical chemistry are normally recommended but these courses may be taken during the work towards the Master's degree.

Required: the general requirements, pages 69-71, including Biochemistry 221-22; Physiology 232; Pharmacology 261, 299-300. The remaining courses may be selected from Biochemistry 224, 241; Chemistry 156; Physiology 259; Microbiology 211, 225, 227, 233; Pharmacology 249-50, 267-68, 269-70, 272, 279-80, 281, 282, 283, 284.

*Doctor of Philosophy.*—See pages 75-84.

- 249-50 **Introduction to Medical Research** † (3-3) The Staff  
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—anatomical, statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, \$7.50 a semester. (Academic year—W 1-5 pm.)
- 252 **Seminar: Clinical Pharmacology** (2) Weiss  
Special problems in therapeutics with emphasis on drugs used in the treatment of cardiovascular and infectious diseases. Students participate in discussions and preparation of some lectures. Enrollment limited. (Spring—as arranged.)
- 254 **Frontiers in Pharmacology** (1) Mandel and Staff  
Recent advances and fields of active research in pharmacology. Most of the material will be presented by laboratory scientists from neighboring institutions. Limited to 50 medical and graduate students. (Spring—as arranged.)
- 256 **Molecular Pharmacology** (1) Hahn  
Molecular basis and mechanism of action of chemotherapeutic agents. Limited to 50 medical and graduate students. (Spring—as arranged.)
- 258 **Cancer** (2) Mandel and Staff  
Nature and treatment of cancer with particular emphasis on chemotherapy; discussion of the underlying biochemistry of neoplastic tissue and the problems associated with the "rational" approach in pharmacology. Limited to 50 medical and qualified graduate students. (Spring—as arranged.)
- 261 **Pharmacology** (8) Mandel and Staff  
Lectures, laboratories, and recitations concerning the interaction of drugs and biological systems as a basis for the rational therapy of disease. Open to qualified nonmedical students. (Fall—9 hours a week.)
- 267-68 **Pharmacological Research** (3-3) The Staff  
Primarily for those properly qualified graduate and medical students seeking careers in pharmacology. (Academic year—as arranged.)

\* Staff of Instruction for the academic year 1964-65.

† An interdepartmental course. The student should register in the department directing his research.

- 269-70 **Pharmacology Seminar (1-1)** The Staff  
Recent advances in pharmacology. For those interested in pharmacological research. Open to qualified nonmedical students. (Academic year—2 hours a week.)
- 272 **Physiological Disposition of Drugs (3)** Cohn, Davison  
A lecture and seminar course dealing with the fate of drugs in biological tissue. Discussion of absorption, distribution, chemical alteration, and excretion of drugs, and the physical, chemical, and biological factors affecting these processes. Prerequisite: Pharmacology 261. (1965-66 and alternate years: spring—as arranged.)
- 279-80 **Special Topics in Pharmacology (arr.)** The Staff  
A lecture course dealing with selected aspects of drug action. Prerequisite: Pharmacology 261. (Academic year—as arranged.)
- 281 **Physiological Techniques in Pharmacology—Lecture (1)** Farber, Mazel  
A series of specially selected experiments with supplementary lectures designed to illustrate physiological techniques useful in obtaining information as to mechanism and site of action of pharmacological agents. Prerequisite or concurrent registration: Pharmacology 261. (1965-66 and alternate years: fall—as arranged.)
- 282 **Physiological Techniques in Pharmacology—Laboratory (2)** Farber, Mazel  
A laboratory course designed to accompany 281. Prerequisite or concurrent registration: Pharmacology 261 and 281. (1965-66 and alternate years: fall—as arranged.)
- 283 **Biochemical Techniques in Pharmacology—Lecture (1)** Cohn, Davison  
Pharmacology 283 and 284 combine to make a lecture and laboratory course designed to equip the student with the theory and practice of modern biochemical techniques applicable to the study of the metabolic fate and mechanism of action of drugs. Pharmacology 283 may be taken without 284. Prerequisite or concurrent registration: Pharmacology 261. (1966-67 and alternate years.)
- 284 **Biochemical Techniques in Pharmacology—Laboratory (2)** Cohn, Davison  
A laboratory course designed to accompany 283. Prerequisite or concurrent registration: Pharmacology 261 and 283. (1966-67 and alternate years.)
- 299-300 **Thesis (3-3)** The Staff  
Required of Master of Arts and Master of Science candidates. (Academic year—as arranged.)

## Philosophy\*

Associate Professor R. H. Schlagel (*Acting Chairman*)

Assistant Professors C. H. Pfuntner, W. B. Griffith

*Bachelor of Arts with a major in Philosophy (Field-of-Study).*—Prerequisite: the Arts and Letters curriculum, page 57.

Required: in addition to the general requirements, pages 63-67, the passing of the Philosophy major examination at the end of the senior year. The coordinated knowledge upon which the student will be examined is schematized under the following two general headings: (1) methodology and theory of knowledge and (2) the history of ideas and social philosophy. The Department of Philosophy provides a proseminar (Philosophy 199-200) intended to assist the student in preparing for the major examination.

\* Staff of Instruction for the academic year 1964-65.



*Master of Arts in the field of Philosophy.*—Prerequisite: an undergraduate major in Philosophy at this University or the equivalent, as attested by the passing of this University's major examination in Philosophy; the following courses or the equivalent: Philosophy 111-12, 113, 121-22, and 131.

Required: the general requirements, pages 69-71. As much as possible of the required course work must be in third-group courses. Where second-group courses are elected students will be required to do more intensive and extensive work than undergraduates. A general written examination in two areas of Philosophy and an oral examination in the student's special field will be required in addition to a Master's thesis of substantial length.

*Master of Arts in the field of Linguistics.*—See pages 258-59, and the departments of Germanic Languages and Literatures and Romance Languages and Literatures.

## **First Group 51-52 Introduction to Philosophy (3-3)**

**The Staff**

A critical introduction to the problems of modern philosophy in relation to scientific and social developments since the Renaissance. This course is not merely intended as an introduction to those courses in philosophy which follow but is a unit complete in itself for those students in other departments interested in the problems of philosophy relevant to modern thought. (Academic year—day and evening; summer 1965.)

## **Second Group 111-12 History of Philosophy (3-3)**

**Pfuntner**

The history of western philosophy from early Greece to Kant, seen as the development and modification of the Hellenic cultural pattern. (Academic year—day.)

### **113 History of 19th and 20th Century Philosophy (3)**

**Pfuntner**

European philosophy from the time of Kant. "Isms" and ideologies at the root of contemporary thought. (Fall—day.)

### **121-22 Logic and Scientific Method (3-3)**

**Griffith**

*First half:* the elementary principles of valid reasoning with emphasis on developing skill in using these principles, introductory consideration of symbolic logic, the nature of a formal system. *Second half:* general analysis of the methods of investigation and reasoning used in the natural and social sciences, procedures and requirements of definition, classification and sorting, analogical and inductive inference, causal determination, the nature and function of hypothesis, measurement, principles of the theory of probability. (Academic year—evening; summer 1965.)

### **131 Ethics (3)**

**Griffith**

A critical examination of traditional ethical theories from Plato to Ayer. Consideration of the theoretical problems of ethics: the meaning of "good," the nature of ethical judgment, the justification of ethical standards. The course aims at enabling the student to develop his own ethical view as a consequence of his greater understanding of moral phenomena. (Fall—day.)

### **151 The Philosophy of Science (3)**

**Schlagel**

Investigation of the philosophical implications of the development of scientific concepts and methodology in the physical sciences since the 16th century, concentrating on the conceptual revolutions beginning with the 20th century. (Fall—evening.)

### **152 Epistemology (3)**

**Schlagel**

A critical examination of contemporary theories and problems of knowledge. (Spring—evening.)

### **162 Aesthetics (3)**

**The Staff**

The nature of aesthetic experience, problems of appreciation and judgment in the arts, and of the theories and process of artistic creation. Emphasis on contemporary arts and criticism. (Spring—day.)



- 172 **American Philosophy (3)** Pfuntner  
The philosophies of Peirce, Royce, James, Dewey, and Santayana as representatives of American thought. (Spring—day; summer 1965.)
- 180 **Philosophy of History (3)** The Staff  
Problems of historical knowledge and explanation. Critique of philosophies of history. (Fall—day.)
- 193 **Topics in Contemporary Philosophy (3)** Schlagel  
Intensive study of one selected topic: cosmology from myth to science. (Summer 1965.)
- 196 **Philosophy of Language (3)** Schlagel  
Investigation of the logical syntax of language, different symbolic forms, the problem of meaning and linguistic reference. (Spring—day.)
- 199–200 **Proseminar: Readings for the Major (3–3)** The Staff  
Conferences and group discussions in preparation for field-of-study major examination. (Academic year—as arranged.)
- 201–2 **Readings and Research (3–3)** The Staff *Third Group*  
Advanced readings and reports. Investigation of special problems. (Academic year—as arranged.)
- 211 **Seminar: Plato (3)** Griffith  
Intensive study of Plato's later dialogues. (Not offered 1965–66.)
- 216 **Seminar: Kant (3)** Schlagel  
A study of one of Kant's Critiques. (Fall—evening.)
- 231 **Seminar: Foundations of Value Theory (3)** Griffith  
Study of the general nature of theories of value, with special attention to the presuppositions required and to the problem of validation of normative systems. (Spring—evening.)
- 252 **Seminar: Epistemology (3)** Schlagel  
Intensive study of selected topics in theory of knowledge. (Not offered 1965–66.)
- 262 **Seminar: Aesthetics (3)** The Staff  
Intensive study in selected problems. (Not offered 1965–66.)
- 272 **Seminar: American Philosophy (3)** Pfuntner  
Topic for spring 1966—Development of American Pragmatism. (Spring—evening.)
- 299–300 **Thesis (3–3)** The Staff

#### RELATED COURSES IN OTHER DEPARTMENTS

Anthropology 161 *Language and Culture* (3)  
Classical Languages and Literatures 71–72 *Greek and Roman Backgrounds in Literature* (3–3)  
English 125 *Introduction to English Linguistics* (3)  
History 105–6 *Introduction to the History of Science* (3–3)  
Mathematics 101 *Introduction to Mathematical Logic* (3)  
Political Science 117–18 *Political Theory: the Nature and Growth of Political Thought in the West* (3–3)  
Psychology 196 *History and Systems of Psychology* (3)

## Physical Education for Men\*

*Professors* W. H. Myers (*Acting Chairman*), R. G. Hanken, V. J. DeAngelis

*Associate Professorial Lecturers* W. D. Thompson, J. D. Shirley

*Assistant Professor* R. A. Dearden

*Assistant Professorial Lecturer* Pat Abernethy

*Instructor* C. B. Reed

*Instructor (part-time)* V. D. Elder

This department includes all the recognized athletic activities of the men students of the University except intercollegiate athletics.

Two years of Physical Education (Physical Education 1-2 and 11-12) are required of all men for graduation, except those students exempt under the regulations stated on pages 55-56.

Upon entering the University, all freshmen or other undergraduate students who have not fulfilled the Physical Education requirements are given a medical examination. Assignments for medical examinations will be given at the time of registration. The students who satisfy the requirements of the medical examination are then given a physical efficiency test in the general body skills of agility, endurance, and strength; and in swimming. If the physical efficiency test is passed, the student may elect from the following list of activities:

Setting-up Exercises (stretching exercises)

Body Building Exercises (gymnastic apparatus and weight training skills)

Competitive games and sports

Swimming (beginner, intermediate, advanced, life saving)

If the physical efficiency test is not passed, the student will be assigned to a class for training in the above activities in the order listed.

The student furnishes gymnasium uniforms and personal equipment.

*Bachelor of Science in Physical Education.*—Prerequisite: the Physical Education for Men curriculum, page 59. The requirements for the degree are stated on pages 87-88, 99-101.

*Bachelor of Arts in Education with (1) a major in secondary education combined with a teaching field in Physical Education and (2) a major in elementary education with an area of specialization in Physical Education.*—See pages 87-90, 96-97.

*Master of Arts in Education with a field in Physical Education.*—See pages 103-5.

- First Group 1-2 Freshman Physical Education (1-1)** **The Staff**  
Two periods of supervised activity a week. Physical Education fee†, \$4.50 a semester. (Academic year—as arranged.)
- 11-12 Sophomore Physical Education (1-1)** **The Staff**  
Two periods of supervised activity a week. Physical Education fee†, \$4.50 a semester. (Academic year—as arranged.)
- 41 Personal Health (1)** **Reed**  
Physical, mental, and social health of the individual—understanding, significance, and promotion. Emphasis on personal health knowledges for the future teacher. (Spring—day.)

\* The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of Physical Education, and the student assumes full responsibility therefor.

† The Physical Education fee is required for registration in one or more of the activity courses.

- 43-44 **Techniques of Physical Education Motor Activities (2-2)** Reed, Elder  
Fundamental skills, rules, and organization. Physical Education fee \*, \$4.50 a semester. (Academic year—day.)
- 45-46 **Teaching Individual and Dual Sports in Secondary Schools (2-2)** Hanken, Reed  
Tennis, golf, swimming, wrestling, badminton, bowling. Physical Education fee \*, \$4.50 a semester. (Academic year—day.)
- 48 **Introduction to Recreation (2)** Hanken  
The role of recreation in modern living; current practices in community recreation work; standards of training, experience, and salary; types of leadership. (Spring—day.)
- 49 **Human Anatomy (3)** Stallings  
The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biological Sciences 2. (Fall—day.)
- 50 **Kinesiology (3)** Lawrence  
A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy. (Spring—day.)
- 53 **Fundamentals of Creative Dance (2 to 3)** Burtner  
Technique for training the body. Improvisation for exploration in movement; elements and principles of composition. (Spring—as arranged.)
- 55-56 **Introduction to Physical Education (1-1)** DeAngelis  
Orientation in the problems of physical education, vocational analysis, scientific foundations, and scope of field. (Academic year—day.)
- 59-60 **Leadership Organization in the Intramural Program (2-2)** DeAngelis  
Principles of administration, organization, and supervision of intramural activities in the physical education program of the junior high school, senior high school, and college. \* (Academic year—day.)
- 101 **Physical Education in the Elementary School (3)** Burtner, Snodgrass  
Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the various age levels in elementary school, playground, and settlement house programs. Methods and materials of tumbling, games, dance, and self-testing activities. (Fall—day; spring—evening; summer 1965.)
- 103 **History and Principles of Physical Education (3)** Stallings, DeAngelis  
Survey of history as it relates to contemporary physical education. Study of aims, objectives, and philosophy of physical education. (Fall—day.)
- 105 **Adapted Physical Education and Physical Examinations (3)**  
Cause and correction of faulty body mechanics, physical examination methods for the diagnosis of postural defects, prescription of exercises, and program adaptation. Prerequisite: Physical Education 49 and 50. (Fall—day.)
- 107 **Teaching Recreational Dance (1 to 2)** Burtner, Mason  
Methods and materials for teaching the country and social dances of America and the folk dances of other countries to secondary school age and adult groups. Square-dance calling is included. Physical Education fee\*, \$4.50. (Fall—day.)

*Second  
Group*

\* The Physical Education fee is required for registration in one or more of the activity courses.



- 113-14 **Practice in Teaching Physical Education Activities (3-3)** Hanken and Staff  
Principles and methods applied to learning and teaching physical education activities. Supervised laboratory. Physical Education fee\*, \$4.50 a semester. (Academic year—day.)
- 115-16 **Teaching Team Sports in Secondary Schools (2 to 4-2 to 4)** DeAngelis, Hanken  
Football, basketball, baseball, track and field. Physical Education fee\*, \$4.50 a semester. (Academic year—day.)
- 117 **Teaching Modern Dance (1 to 3)** Burtner  
Techniques for the teaching of movement as a medium of expression. Practical work in body technique, composition, and the analysis of accompaniment for dance including instrumental, voice, and percussion. Application is made to both secondary school and adult age levels. Physical Education fee\*, \$4.50. (1966-67 and alternate years.)
- 118 **Dance Production (1 to 3)** Burtner  
Planning and staging of performances for demonstrations, dance concerts, and folk festivals. Lighting, costuming, sets, and make-up. Choreography for concerts, musicals, and plays for students taking course for two credits. Physical Education fee\*, \$4.50. (1966-67 and alternate years.)
- 121 **School and Community Health Programs (3)** Reed  
Health services, healthful environment, health instruction, sources of material for general health knowledge. Prerequisite: Biological Sciences 2. (Fall—evening.)
- 122 **Methods and Materials for Health Education (3)** Stallings  
Methods and materials for teaching health. Prerequisite: Biological Sciences 2. (Spring—evening.)
- 131 **Tests and Measurements in Physical Education (3)** Dearden  
Critical survey of tests in physical activities, methods of test construction, elementary statistics. (Fall—day.)
- 132 **Camp Leadership (1 to 2)** Snodgrass  
Philosophy and techniques of camp counseling; survey of organization and programs including outdoor education. Also open to both men and women not majoring in Physical Education. (Spring—day.)
- 134 **Rhythmic Analysis in Relation to Movement (3)**  
Kinesthetic awareness of rhythmic flow of movement, aspects of meter, rhythmic characteristics of the dance of various cultures. Prerequisite: one semester of modern dance, recreational dance, or ballet, or the equivalent. (Spring—day.)
- 135-36 **Survey of Dance History (3-3)** Burtner  
The development of dance from primitive ritual to present-day folk, square, social, classical and modern ballet, modern dance, and ethnologic dance. Practical work in dance is included. *First half:* prehistoric to 20th century. *Second half:* to the present. (Academic year—evening.)
- 138 **Organization and Administration of Physical Education (3)** Dearden  
Organization and administration of physical education programs in elementary and secondary schools and in colleges. Study of plants, fields, equipment, and programs. (Spring—evening.)
- 151-52 **Recreational Leadership Activities (3-3)** Abernethy  
Fall semester: basic skills for the preschool and school-age child. Labora-

\* The Physical Education fee is required for registration in one or more of the activity courses.

tory practice in crafts, music, dramatics, physical and social activities. Spring semester: basic skills for the teen-age and adult. Arts and crafts, dramatics, physical and social activities. (1965-66 and alternate years: academic year—evening.)

158 **Safety Education: Care and Responsibility for Athletic Injuries (3)** Dearden

Liability, prevention, and emergency care of all types of injuries with reference to first aid, civil defense, and athletics. Safety education, with emphasis on proper use of personnel, facilities, and equipment. Laboratory experience with physiotherapy equipment. Prerequisite: Biological Sciences 2. (Spring—day.)

161 **Community Organization for Recreation (3)** Thompson  
Resources, principles, and methods in organizing community recreation services. (1966-67 and alternate years.)

162 **Administration of Community Recreation Programs (3)** Thompson  
Factors and problems in administering recreation including surveys, legislation, program, area, facilities, leadership, finance, and public relations. (1966-67 and alternate years.)

211 **Problems in Physical Education (3)**

*Third Group*

For experienced teachers. Organization, supervision, and curriculum problems growing out of current issues; program planning policies; competition. (1966-67 and alternate years.)

220 **Problems in Health Education (3)**

Health needs, policies and program planning, use of community resources, promising practices in the field. (1966-67 and alternate years.)

231 **Evaluation in Physical Education (3)**

Planning the evaluation program, review of outcomes, analysis of tests and standards, administration and interpretation of tests, guidance. (1965-66 and alternate years: fall—evening.)

240 **Physical Education for the Atypical (3)**

Adaptations of activities to meet the special needs of students with physical disabilities resulting from such conditions as postural deviations, cardiac irregularities, operations, and poliomyelitis. (1965-66 and alternate years: spring—evening.)

## **Physical Education for Women\***

*Professors* Helen Lawrence (*Emeritus*), Elizabeth Burtner

*Associate Professors* Loretta Stallings (*Chairman*), Lyndale George, Jeanne Snodgrass

*Associate Professorial Lecturer* W. D. Thompson

*Assistant Professor* Gayle Clapp

*Assistant Professorial Lecturer* Pat Abernethy

*Instructors* Donna Abbey, Kathleen Mason, Nan Smith

*Instructor (part-time)* Mabel McEwan

\* The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of Physical Education, and the student assumes full responsibility therefor.

Staff of Instruction for the academic year 1964-65.

Two years of Physical Education (Physical Education 1-2 and 11-12) are required of all women for graduation, except students exempt under regulations stated on pages 55-56. In the fall a medical and physical examination is given each student for the purpose of discovering individual needs. Those students whose examinations indicate the desirability of remedial or restricted activity are assigned to a program especially adapted to their needs. This limited program includes moderate sports and individual exercises in small groups under careful supervision.

The required costume for Physical Education classes may be purchased at the University Book Store.

**Bachelor of Science in Physical Education.**—Prerequisite: the Physical Education for Women curriculum, pages 59-60. The requirements for the degree are stated on pages 87-88, 101-2.

Within the curriculum leading to the degree of Bachelor of Science in Physical Education there is opportunity for specializing in dance, health education, or recreation.

**Bachelor of Arts in Education with (1) a major in secondary education combined with a minor teaching field in Physical Education and (2) a major in elementary education with an area of specialization in Physical Education.**—See pages 87-90, 96-97.

**Bachelor of Arts in Education with a teaching field in Dance.**—Prerequisite: the Education curriculum, page 59.

Required: the Dance option and the professional courses listed on page 99.

**Master of Arts in Education with a field in Physical Education.**—See pages 103-5.

- |                     |              |   |                           |
|---------------------|--------------|---|---------------------------|
| <b>First Group</b>  | <b>1-2</b>   | <b>Freshman Physical Education (1-1)</b>  | <b>The Staff</b>          |
|                     |              | One period of fundamentals of health and physical education and two periods a week chosen from the activities offered each semester. Physical Education fee,* \$4.50 a semester. (Academic year—day.) |                           |
|                     | <b>11-12</b> | <b>Sophomore Physical Education (1-1)</b>   | <b>The Staff</b>          |
|                     |              | Two periods a week chosen from the activities offered each semester. Physical Education fee,* \$4.50 a semester. (Academic year—day.)   |                           |
|                     | <b>43-44</b> | <b>Techniques of Physical Education Motor Activities (2 to 3-2 to 3)</b>  | <b>The Staff</b>          |
|                     |              | Fundamental skills. Physical Education fee,* \$4.50 a semester. (Academic year—as arranged.)  |                           |
|                     | <b>49</b>    | <b>Human Anatomy (3)</b>  | <b>Stallings</b>          |
|                     |              | The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biological Sciences 2. (Fall—day.)     |                           |
|                     | <b>50</b>    | <b>Kinesiology (3)</b>  | <b>Lawrence</b>           |
|                     |              | A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy. (Spring—day.)                       |                           |
|                     | <b>51-52</b> | <b>Teaching Physical Education Activities (2 to 3-2 to 3)</b>   | <b>The Staff</b>          |
|                     |              | First half: Basketball, tennis, and badminton. Second half: softball and archery. (1965-66 and alternate years: academic year—day.)   |                           |
|                     | <b>53</b>    | <b>Fundamentals of Creative Dance (2 to 3)</b>  | <b>Burtner</b>            |
|                     |              | Techniques for training the body. Improvisation for exploration in movement: elements and principles of composition. (Spring—as arranged.)  |                           |
| <b>Second Group</b> | <b>101</b>   | <b>Physical Education in the Elementary School (3)</b>  | <b>Burtner, Snodgrass</b> |
|                     |              | Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the  |                           |

\* The Physical Education fee is required for registration in one or more of the activity courses



various age levels in elementary school and playground programs. Methods and materials of tumbling, games, dance, self-testing activities, and body mechanics. (Fall—day; spring—evening; summer 1965.)

- 103 **History and Principles of Physical Education** (3) Stallings, DeAngelis  
Survey of history as it relates to contemporary physical education. Study of aims, objectives, and philosophy of physical education. (Fall—day.)
- 105 **Adapted Physical Education and Physical Examinations** (3)  
Cause and correction of faulty body mechanics, physical examination methods for the diagnosis of postural defects, prescription of exercises, and program adaptation. Prerequisite: Physical Education 49 and 50. (Fall—day.)
- 107 **Teaching Recreational Dance** (1 to 2) Burtner, Mason  
Methods and materials for teaching the country and social dances of America and the folk dances of other countries to secondary school age and adult groups. Square-dance calling is included. Physical Education fee,\* \$4.50. (Fall—day.)
- 111-12 **Teaching Physical Education Activities** (2 to 3-2 to 3) The Staff  
*First half:* field hockey, soccer, and speedball. *Second half:* gymnastics, tumbling, and track and field. (1966-67 and alternate years.)
- 113-14 **Practice in Teaching Physical Education Activities** The Staff  
(2 to 4-2 to 4)  
Principles and methods applied to learning and teaching physical education activities. Supervised laboratory. Physical Education fee,\* \$4.50 a semester. (Academic year—as arranged.)
- 117 **Teaching Modern Dance** (1 to 3) Burtner  
Techniques for the teaching of movement as a medium of expression. Practical work in body technique, composition, and the analysis of accompaniment for dance including instrumental, voice, and percussion. Application is made to both secondary school and adult age levels. Physical Education fee,\* \$4.50. (1966-67 and alternate years.)
- 118 **Dance Production** (1 to 3) Burtner  
Planning and staging of performances for demonstrations, dance concerts, and folk festivals. Lighting, costuming, sets, and make-up. Choreography for concerts, musicals, and plays for students taking course for two credits. Physical Education fee,\* \$4.50. (1966-67 and alternate years.)
- 121 **School and Community Health Programs** (3) Reed  
Health services, healthful environment, health instruction, sources of material for general health knowledge. Prerequisite: Biological Sciences 2. (Fall—evening.)
- 122 **Methods and Materials for Health Education** (3) Stallings  
Methods and materials for teaching health. Prerequisite: Biological Sciences 2. (Spring—evening.)
- 131 **Tests and Measurements in Physical Education** (3) Dearden  
Critical survey of tests in physical activities, methods of test construction, elementary statistics. (Fall—day.)
- 132 **Camp Leadership** (1 to 2) Clapp  
Philosophy and techniques of camp counseling; survey of organization and programs including outdoor education. Also open to both men and women not majoring in Physical Education. (Spring—day.)
- 134 **Rhythmic Analysis in Relation to Movement** (3)  
Kinesthetic awareness of rhythmic flow of movement, aspects of meter,

\* The Physical Education fee is required for registration in one or more of the activity courses.

rhythmic characteristics of the dance of various cultures. Prerequisite: one semester of modern dance, recreational dance, or ballet, or the equivalent. (Spring—day.)

**135-36 Survey of Dance History (3-3) Burtner**

The development of dance from primitive ritual to present-day folk, square, social, classical and modern ballet, modern dance, and ethnologic dance. Practical work in dance is included. *First half:* prehistoric to 20th century. *Second half:* to the present. (Academic year—evening.)

**138 Organization and Administration of Physical Education (3) Dearden**

Organization and administration of physical education programs in elementary and secondary schools and in colleges. Study of plants, fields, equipment, and programs. (Spring—evening.)

**151-52 Recreational Leadership Activities (3-3) Abernethy**

Fall semester: basic skills for the preschool and school-age child. Laboratory practice in crafts, music, dramatics, physical and social activities. Spring semester: basic skills for the teen-age and adult. Arts and crafts, dramatics, physical and social activities. (1965-66 and alternate years: academic year—evening.)

**158 Safety Education: Care and Responsibility for Athletic Injuries (3) Dearden**

Liability, prevention, and emergency care of all types of injuries with reference to first aid, civil defense, and athletics. Safety education, with emphasis on proper use of personnel, facilities, and equipment. Laboratory experience with physiotherapy equipment. Prerequisite: Biological Sciences 2. (Spring—day.)

**161 Community Organization for Recreation (3) Thompson**

Resources, principles, and methods in organizing community recreation services. (1966-67 and alternate years.)

**162 Administration of Community Recreation Programs (3) Thompson**

Factors and problems in administering recreation including surveys, legislation, program, area, facilities, leadership, finance, and public relations. (1966-67 and alternate years.)

**Third Group 211 Problems in Physical Education (3)**

For experienced teachers. Organization, supervision, and curriculum problems growing out of current issues; program planning policies; competition. (1966-67 and alternate years.)

**220 Problems in Health Education (3)**

Health needs, policies and program planning, use of community resources, promising practices in the field. (1966-67 and alternate years.)

**231 Evaluation in Physical Education (3)**

Planning the evaluation program, review of outcomes, analysis of tests and standards, administration and interpretation of tests, guidance. (1965-66 and alternate years: fall—evening.)

**240 Physical Education for the Atypical (3)**

Adaptations of activities to meet the special needs of students with physical disabilities resulting from such conditions as postural deviations, cardiac irregularities, operations, and poliomyelitis. (1965-66 and alternate years: spring—evening.)

**280 PHYSICAL EDUCATION FOR WOMEN**

## Physics\*

*Professors* G. M. Koehl, Herbert Jehle, H. H. Hobbs (*Chairman*)

*Associate Professors* A. J. Zuchelli, Otto Bergmann, F. R. Tangherlini

*Associate Professorial Lecturers* H. H. Landon, Jr., Herbert Rabin, W. J. Condell, Jr.

*Assistant Professors* S. S. Yeandle, Jr., Margaret Montzka, J. M. Harrison, S. P. Bjorklund, W. H. Venable, Jr., Francisco Prats

*Assistant Professorial Lecturers* J. N. Tevis, K. F. Oerlein

*Instructor* C. G. Dease

*Bachelor of Arts or Bachelor of Science in Physics (Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, page 57, including Physics 1-2, 31-32, 51-52 (or former 11, 12, 13, 16; or 11, 14, 15, 16); Chemistry 21; Mathematics 21, 22, 23, and 24.

Required: for the Bachelor of Arts degree and the Bachelor of Science degree: the general requirements, pages 63-67, including Physics 161, 162, 163, 164, 165-66, 167-68, plus six hours in Mathematics selected from the following: Mathematics 124, 134, 139, 140, and 142.

*Master of Arts or Master of Science in the field of Physics.*—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Physics at this University, or the equivalent.

Required: the general requirements, pages 69-71, including Physics 231, 232, 233-34, 235, 236, 291-92, plus one of the following: 241, 242, 243, 244, 245, or 251-52.

*Doctor of Philosophy.*—See pages 75-84.

*Bachelor of Arts in Education with a teaching field in Physics.*—Prerequisite: the Education curriculum, page 59.

Required: the physics option and the professional courses listed on page 99.

### 1-2 General Physics (4-4)

The Staff *First Group*

Lecture (2 hours), recitation (1 hour), laboratory (2½ hours). Principal phenomena of classical and modern physics. *First half:* a study in depth of selected topics in classical physics which form a foundation for and lead to an understanding of modern physics. *Second half:* the fundamental concepts of atomic, nuclear, solid state, and related fields of modern physics. Prerequisite: two years of college preparatory mathematics or concurrent registration in Mathematics 6. Material fee, \$11 a semester. (*First half:* fall—day and evening; spring—day; summer 1965. *Second half:* fall—day; spring—day and evening; summer 1965.)

### 31-32 Introduction to Theoretical Physics (2-2)

The Staff

The theoretical structure of physics with emphasis on the appropriate analytical techniques. Prerequisite: one year of calculus and Physics 1-2. (Academic year—as arranged.)

### 51-52 Introduction to Experimental Physics (2-2)

The Staff

Experiments and lectures on the basic phenomena of physics and techniques of experimentation. Designed to show the phenomena that are the basis of the theoretical aspect of physics and to introduce the student to experimental techniques necessary for further work in natural sciences. Prerequisite: Physics 1-2 and one year of Calculus. Material fee, \$11 a semester. (Academic year—day and evening.)

\* Staff of Instruction for the academic year 1964-65



- Second Group \***
- 113 Atomic Physics (3)** The Staff  
(Offered last time summer 1965.)
- 116 Quantum and Solid State Physics (3)** The Staff  
Primarily for engineers. Prerequisite: Physics 16, Mathematics 111.  
(Spring—evening.)
- 151-52 Intermediate Laboratory (2-2)** The Staff  
Independent work of an advanced nature designed to introduce the student to laboratory and shop techniques and the use of specialized instruments. Prerequisite: Physics 51-52. Material fee, \$11 a semester. (Academic year—as arranged.)
- 161 Mechanics I (3)** The Staff  
Mechanics of mass points and rigid bodies. Newton's Laws, conservation laws, Euler's equations, inertia tensor, small vibrations, and elements of Lagrange's and Hamilton's equations. (Fall—as arranged.)
- 162 Mechanics II (3)** The Staff  
Basic aspects of elasticity and fluid dynamics, strain tensor, stress tensor, equations of equilibrium, elastic waves, ideal and viscous fluids. (Spring—as arranged.)
- 163 Optics (3)** The Staff  
Oscillations and waves, energy and momentum of the electromagnetic field, interference, diffraction, geometrical optics, optics of crystals and other media, dispersion. (Fall—as arranged; summer 1965.)
- 164 Thermodynamics (3)** The Staff  
Basic principles of thermodynamics, reversible changes, applications to simple systems, thermodynamic potentials, phase equilibrium. (Spring—as arranged.)
- 165-66 Electromagnetic Theory (3-3)** The Staff  
Development of Maxwell's field equations using vector and tensor calculus, electrostatics, special functions, stationary and nonstationary phenomena, basic circuit theory, electromagnetic waves and radiation, relativistic effects, microscopic basis of the macroscopic theory. (Academic year—as arranged.)
- 167-68 Modern Physics (3-3)** The Staff  
The experimental basis of modern physics and an introduction to quantum mechanics and statistical mechanics with applications to atomic and nuclear physics. (Academic year—as arranged.)
- 170 Elementary Solid State Physics (3)** The Staff  
Dielectric and magnetic properties of solids, behavior of electrons in metals and semi-conductors, lattice defects. (Spring—evening.)
- 172 Biophysics (3)** The Staff  
Molecular basis of biophysics, biosynthesis and reproduction. (Fall—evening.)
- 175 Nuclear Physics (3)** Landon  
Structure and stability of atomic nuclei, nuclear transformations and reactions, radiations of nuclei, fission. (Fall—as arranged.)

\* Physics 1-2, 31-32 (or the equivalent), and the consent of a departmental adviser are prerequisite to all second-group courses.

- 231 **Electromagnetic Theory: Macroscopic Effects (3)** The Staff *Third Group*<sup>\*</sup>  
 An advanced presentation of those aspects of electromagnetism having to do with fields in the vacuum and in media, their determination in terms of physical boundary conditions and their effects upon charges and matter; definition of the field quantities, the experimental field relations, solutions for the fields, the effects of dielectrics and magnetic media, time dependent solutions, and basic aspects of optics. (Fall—as arranged.)
- 232 **Advanced Mechanics (3)** The Staff  
 The analytic methods of mechanics, which form a basis for modern theory: variational principles, Lagrange's equations, the Hamiltonian formulation, canonical transformations, classical perturbation theory, the transition to the continuum. (Spring—as arranged.)
- 233-34 **Quantum Mechanics (3-3)** The Staff  
 The general aspects of quantum mechanics with emphasis upon the developmental principles involved rather than specific applications. Operators and linear algebra, representations and transformation theory, Schrodinger and Heisenberg pictures and their equivalence, eigenstates of the energy, momentum, angular momentum, Pauli theory of the spin, the semiclassical limit, perturbation theory, scattering theory, and the time development operator. (Academic year—as arranged.)
- 235 **Special Relativity (3)** The Staff  
 The application of relativistic concepts to the basic fields of physics: space and time, mechanics of point particles, tensors and covariant mechanics of point particles, covariant form of electromagnetism and its connection to Maxwell's equations, relativistic variational principles and conservation laws, relativistic Schrodinger equation, the Dirac equation, and the hydrogen atom. (Fall—as arranged.)
- 236 **Electromagnetic Theory: Electrodynamics and Radiative Effects (3)** The Staff  
 Lienard-Wiechert potentials, radiation from moving charges, multipole fields, covariant methods, the self-field problem, and Dirac's classical radiation theory. (Spring—as arranged.)
- 241 **Statistical Mechanics (3)** Tangherlini  
 An advanced analysis of atomic configurations under thermodynamic conditions using partition functions and cluster expansion techniques. Ideal gases and nonideal gases, electron plasmas, and the liquid state are considered. (Fall—as arranged.)
- 242 **Atomic and Molecular Structure (3)** Jehle  
 The structure of atoms and collections of atoms, the energy levels, binding energy, dipole moments, and optical activity. Hartree and Hartree-Fock equations, spin-effects, molecular orbitals, rotational and vibrational effects, paramagnetic resonance, chemical binding. (Spring—as arranged.)
- 243 **Solid State Physics: Structure and Binding (3)** Hobbs  
 The atomic structure of solids and analysis of the binding of crystals. Crystalline forms and symmetries, atomic vibrations and specific heats, sound and optical propagation, the Mossbauer effect, crystalline defects. (Fall—as arranged.)
- 244 **Solid State Physics: Electronic Processes in Metals (3)** Zuchelli  
 The phenomena in metals and semiconductors determined by the electronic states allowed: binding, specific heats, magnetic properties, transport phenomena. The effects are handled primarily from the independent particle approximation and many-body aspects are discussed. (1965-66 and alternate years: spring—as arranged.)

<sup>\*</sup> Consent of a departmental graduate adviser is required for admission to all third-group courses.

- 245 **Quantum Electrodynamics: Theory and Applications (3)** Zuchelli  
A noncovariant presentation of the lower order effects depending upon the quantal nature of the electromagnetic field: Hamiltonian formulation and field quantization, perturbation calculations, Compton effect, photoelectric effect, electron-electron scattering, pair creation and annihilation, indices of refraction, divergence difficulties. The physical content of the theory and the problems of computation are presented as a preparation for the more formal nature of the advanced approaches. (1966-67 and alternate years.)
- 246 **Quantum Field Theory (3)** Bergmann  
A covariant presentation of the general theory of quantized fields, Boson and Fermion fields, theory of the S-matrix, dispersion relations, and the renormalization program. (1966-67 and alternate years.)
- 247 **Quantum Theory of Many-body Systems (3)** Bergmann  
Modern approaches to systems of many interacting particles: Bohm-Pines theory, superconductivity, development of the effective potential, problems connected with the Fermi surface, perturbative verification of collective motions. (Fall—as arranged.)
- 248 **Elementary Particles (3)** Bjorklund  
Scalar, vector, and spinor fields and their particle aspects, weak and strong interactions, symmetry properties and conservation laws. (Spring—evening.)
- 249 **Statistical Processes (3)** Zuchelli  
Extension of statistical concepts to irreversible processes. Ergodic behavior, classical and quantum approaches to irreversible effects in large systems, master equations, the recurrence paradox and the development of thermodynamic concepts of affinities and fluxes. (Fall—as arranged.)
- 250 **Selected Topics in Modern Physics (3)** The Staff  
Complements the established curriculum by affording formal instruction in topics of immediate interest to the development of physics and in particular to the members of the graduate research group. (This course may be taken several times for credit with the permission of the graduate adviser.) (Spring—evening.)
- 251-52 **Laboratory (2-2)** The Staff  
Individual work on special topics. Material fee, \$11 a semester. (Academic year: Saturdays—as arranged.)
- 254 **General Theory of Relativity** Tangherlini  
Presentation of the physical principles and mathematical methods underlying Einstein's field equation, geodesic equations of motion, checks of the theory, action principle, conservation laws, perturbation theory, gravitational radiation theory, relativistic cosmology. (Spring—as arranged.)
- 291-92 **Seminar (1-1)** The Staff  
Individual investigation of special problems. All students registered for Master's degrees in physics are expected to attend this seminar during residence for the degree, and to take part in its programs. Credit for participation in the seminar work is obtained during the last two semesters of residence; this credit, however, is based upon the seminar work during the entire period of residence. (Academic year—evening.)
- 299-300 **Thesis (3-3)** The Staff  
(Academic year—as arranged; summer 1965.)



## Physiology\*

*Professors* C. E. Leese, C. S. Tidball (*Chairman*)

*Professorial Lecturers* Audrey Davis, L. L. Langley

*Associate Professors* Hortense Louckes (*Research*), Elizabeth Tidball (*Research*)

*Associate Professorial Lecturer* P. G. Nelson

*Assistant Professors* Marie Cassidy (*Visiting*), Q. L. Hartwig

*Assistant Professorial Lecturers* J. F. Hoffman, D. P. Rall, R. J. Podolsky, Barbara Alving, J. B. Block, J. S. Skinner, R. E. Alving

*Instructor* Elizabeth Stephenson

*Instructors (part-time)* W. A. Hagins, M. B. Burg, J. P. Gilmore, E. S. Henderson, Lawrence Rabinowitz, G. T. Ross, Richard Moore, R. H. Adamson

*Special Lecturers* S. J. Sarnoff, J. H. U. Brown

*Master of Science in the field of Physiology.*—Prerequisite: a Bachelor's degree. No major is specified, but the undergraduate program must have included the following courses or the equivalent: Biological Sciences 1-2; Chemistry 11-12, 21, 22, 151-52; Mathematics 21, 22; Physics 1-2.

Required: the general requirements, pages 69-71. In addition to the thesis, the thirty hours of required work should include Physiology 221 or 222, 232, and at least three semester hours of research (Physiology 295 or 296).

*Doctor of Philosophy.*—See pages 75-84.

- 211-12 **Problems in Physiology** (arr.) The Staff  
Directed study under the supervision of a staff member. Admission by permission of the instructor. (Academic year—as arranged.)
- 221-22 **Physiology Seminar** (1-1) Louckes, Stephenson  
Prerequisite: Physiology 232 and a reading knowledge of French or German. (Academic year—Th 1 pm.)
- 232 **Mammalian Physiology** (10) The Staff  
Lecture 6 hours a week, conference 2 hours a week, laboratory 6 hours a week. Lecture and laboratory work in all divisions of physiology for medical and graduate students. Prerequisite: Chemistry 151-52, Physics 1-2, or the equivalent. Prerequisite or concurrent registration: Biochemistry 221-22 or the equivalent. (Spring—MTWF 1-5 pm.)
- 251 **History of Medicine** (1) E. Tidball  
Lecture (1 hour). Primarily an elective course for medical students; other students are admitted with the consent of the instructor. (Fall—T 11 am.)
- 253 **Electronic Instrumentation** (2) B. Alving  
Lecture (1 hour), laboratory (3 hours). Fundamentals of electronics and their application to measurement of physiologic phenomena. Prerequisite: Mathematics 22, Physics 1-2, and the consent of the instructor. (1966-67 and alternate years: fall—as arranged.)
- 255 **Introduction to Electrocardiography** (1) Alving, Caceres, and Staff  
Lecture or laboratory (1 hour). These sessions are intended to provide a basic understanding of cardiac electrical activity, the means used to record it, and a limited amount of information on the application of these principles to the diagnosis of cardiac disease. (Fall—T 4-5 pm.)

\* Staff of Instruction for the academic year 1964-65.

- 257 **Evaluation of Scientific Literature** (1) C. Tidball and Staff  
Conference (1 hour). Discussion structured around the criteria used to evaluate a scientific publication. Reports from the literature are made. (Fall—Th 11 am.)
- 259 **Comparative Physiology** (2) The Staff  
Lectures and seminars on topics of current interest in comparative physiology with emphasis on nonmammalian forms. Prerequisite: Physiology 232 or Biological Sciences 162, and the consent of the instructor. (1966-67 and every fourth year.)
- 265 **Advanced Cellular Physiology** (2)  
Lecture (2 hours). Prerequisite: Physiology 232. (1965-66 and alternate years: fall—as arranged.)
- 267 **Advanced Environmental Physiology** (2)  
Lecture (2 hours). Prerequisite: Physiology 232. (1966-67 and alternate years: fall—as arranged.)
- 275 **Advanced Cardiovascular Physiology** (2)  
Lecture (2 hours). Prerequisite: Physiology 232. (1965-66 and every third year: fall—as arranged.)
- 295-96 **Research** (arr.) The Staff  
Prerequisite: Physiology 232 or the equivalent. (Academic year—as arranged.)
- 299-300 **Thesis** (3-3) The Staff

## Political Science\*

*Professors* W. R. West (*Emeritus*), J. W. Brewer, W. H. Kraus, K. L. London, R. E. Purcell (*Visiting*), H. M. Stout, H. L. LeBlanc (*Chairman*)

*Professorial Lecturers* F. M. Riddick, F. L. Hadsel, E. M. Glick

*Associate Professors* Benjamin Nimer, H. R. Ludden, R. S. Jordan, H. C. Hinton

*Assistant Professors* J. A. Morgan, Jr., Bernard Reich

*Assistant Professorial Lecturers* C. H. Slayman, D. T. Allensworth, Sally Shames

*Instructor* T. D. Mead

*Bachelor of Arts with a major in Political Science (Departmental).*—Prerequisite: the Arts and Letters curriculum, page 57, including Political Science 9-10.

Required: in addition to the general requirements, pages 63-67, thirty semester hours from the following groups distributed as follows: twelve hours from Group A; six hours from Group B; six hours from Group C; and six additional hours from any group or groups. The student will normally complete all six hours of any full-year course which he selects.

Group A: Political Science 111, 112, 117-18, 121-22. Group B: Political Science 171, 172, 181-82. Group C: Political Science 104, 125, 145, 146, 151-52. Group D: 105, 107, 113, 119, 120, 141, 157-58, 167, 177-78, 187-88, 190, 191, 192, 193, 194, 199.

American Thought and Civilization 101 *American Civilization* is recommended as a senior-year elective for Political Science majors.

\* Staff of Instruction for the academic year 1964-65

*Bachelor of Arts with a major in Latin American Civilization (Field-of-Study).—See the Department of History.*

*Master of Arts in the field of Political Science.—Prerequisite: a Bachelor of Arts degree with a major in Political Science at this University (or the equivalent major elsewhere) with a B average (or better) in the major.*

*Required: the general requirements, pages 69–71. The thirty hours of required work must be approved in advance by the Adviser.*

*Master of Arts in the field of Latin American Civilization.—See the Department of History.*

*Doctor of Philosophy.—See pages 75–84.*

*Bachelor of Arts in Government or Master of Arts in Government in the fields of International Affairs or Public Affairs.—See pages 112–115, 121–23; 125–26, 131–32, 132–34.*

- |        |   |           |                       |
|--------|---|-----------|-----------------------|
| 1      | <b>Introduction to Government (3)</b>   | The Staff | <i>First Group</i>    |
|        | Basic principles and problems of political life: theories, forms, and processes of government in the United States and foreign countries. Attention is also given to international relations. (Fall—evening; spring—day.)   |           |                       |
| 9–10   | <b>Government of the United States * (3–3)</b>  | The Staff |                       |
|        | <i>First half: structure, powers, and operation of the Federal Government: Congress, the President, and the Supreme Court, elections, political parties, and pressure groups. Second half: state and local governments; civil rights; major functions of government at federal, state, and local levels. (First half: fall—day and evening, spring—day; summer 1965. Second half: fall—day; spring—day and evening; summer 1965.)</i> |           |                       |
| 101    | <b>The Far East in the Modern World (3)</b><br>(Formerly Political Science 2)   | Michael   | <i>Second Group *</i> |
|        | The general character of Far Eastern societies and their response to the impact of America, Europe, and Russia. Some attention to American policy in the Far East and the influence of world communism. (Fall—day.)   |           |                       |
| 104    | <b>State and Local Governments (3)</b>  |           |                       |
|        | State, municipal, and other local governmental forms, operations, and problems, with attention to policy formulation and administration, and to the forces of practical politics. (Spring—day.)   |           |                       |
| 107    | <b>Problems in Modern Political Thought (3)</b>   | Kraus     |                       |
|        | Development of democratic political institutions and analysis of the main challenges to constitutional democracy in the 19th and 20th centuries. (Not offered 1965–66.)   |           |                       |
| 111    | <b>Introduction to Comparative Government and Politics (3)</b>  | Stout     |                       |
|        | Government and politics of the principal constitutional democracies of Western Europe: Great Britain and France. (Fall—evening.)  |           |                       |
| 112    | <b>Introduction to Comparative Government and Politics (3)</b>  | Stout     |                       |
|        | Government and politics of the principal political systems of Central and Eastern Europe: Germany and the Soviet Union. (Spring—evening.)   |           |                       |
| 113    | <b>Political Problems of the British Commonwealth of Nations (3)</b>  | Stout     |                       |
|        | From Colonial Empire to modern Commonwealth: questions of equal partnership, governments and policies in the principal Commonwealth states; problems of new states in Asia and Africa. (Fall—day.)  |           |                       |
| 117–18 | <b>Political Theory: the Nature and Growth of Political Thought in the West (3–3)</b>   | Kraus     |                       |
|        | <i>First half: from Classical Antiquity to the Middle Ages; the forging of the</i>  |           |                       |

\* Political Science 9–10 is prerequisite to all second-group courses



western political tradition. *Second half*: from the Renaissance and Reformation to recent times. Theoretical foundations of the modern state: morals and politics, sovereignty, absolutism, and resistance; liberalism, democracy, and conservatism. (Academic year—day.)

- 119-20 **Foundations of American Democracy (3-3)** Morgan  
Introduction to political thought in the United States from colonial times to the present. (Academic year—day; summer 1965—Political Science 119 (3).)
- 121-22 **The Constitution of the United States (3-3)** West  
Judicial power of federal courts in constitutional interpretation. *First half*: emphasis on separation of powers, federal-state relationships, and taxation. *Second half*: emphasis on constitutional protection of civil rights. (Academic year—day.)
- 125 **Legislative Organizations (3)** Riddick  
A study of Congress: constitutional aspects, legal analysis of make-up, and political organization. Political and parliamentary procedures used in the preparation and enactment of legislation. (1965-66 and alternate years: fall—evening.)
- 141 **The Development of Legal Institutions (3)** Brewer  
Introduction to historical jurisprudence: primary attention to the origins of the Roman Law of Continental Europe and of the Anglo-Saxon Common Law. (Fall—day.)
- 145 **Political Parties and Politics (3)** LeBlanc  
Organization and operations of political parties in the United States: major and minor parties, bosses and corruption, nominations and elections, influence on President and Congress. (Fall—day.)
- 146 **Political Pressures and Public Reactions (3)** Ludden  
Public opinion, special interest lobbies, and pressure groups as they operate on government to influence public policy. (Spring—day.)
- 151-52 **Public Administration (3-3)**  
Introductory survey of the theory and practice of governmental administration and its relation to politics, legislation, the courts, and nongovernmental organizations and interests. (Academic year—day.)
- 157-58 **Current Problems in Domestic Politics (1-1)** Shames  
Analysis of outstanding contemporary issues in internal American politics with discussion of problems and policies. (Academic year—evening.)
- 167 **Foreign Policy of the United States (3)** Reich  
The study of the constitutional and political factors that determine the formulation and execution of the foreign policy of the United States. (Fall—day; summer 1965.)
- 171 **International Politics (3)** Purcell, Nimer  
Basic forces underlying the conduct of international relations and the formation of foreign policy; power politics, imperialism, collective security, and international cooperation. (Fall—day and evening; summer 1965.)
- 172 **Organization and Function of the United Nations (3)** Purcell  
(Formerly International Organization: the United Nations)  
Development and current operation of international organization within the system of sovereign states with emphasis on the United Nations. (Spring—day and evening.)
- 177 **Recent Trends in Latin American Politics and Government (3)** Davis  
Types of government, recent developments, and current political conditions

in each of the twenty Latin American republics. (Fall—evening; summer 1965.)

- 178 **International Politics in the Western Hemisphere (3)** Davis  
Political relations of the American Republics in the 19th and 20th centuries, the development of Pan Americanism and the Organization of American States. (Spring—evening.)
- 181-82 **Survey of Public International Law and Organization (3-3)** Brewer  
(Formerly International Law)  
Survey of the public law of nations with emphasis on the law of peace. Neutrality and the so-called law of war receive attention in the second semester. (Academic year—day and evening; summer 1965—Political Science 181 (3).)
- 187-88 **Current Problems in International Politics (1-1)** Shames  
Analysis of outstanding contemporary international issues with discussion of problems and policies. (Academic year—evening.)
- 190 **Politics of Middle and Southern Africa (3)** Nimer  
(Political Science 190, 191, and 192 replace former 191 and 192)  
The political life of the states and dependent territories of non-Mediterranean Africa, including the upper Nile valley and the Horn of Africa. Special attention to the specifically regional aspect of the foreign policies of these countries. (Fall—evening; summer 1965.)
- 191 **Governments and Politics of the Middle East (3)** Reich  
(Political Science 190, 191, and 192 replace former 191 and 192)  
Domestic and international politics of the Eastern Arab States and Principalities, Turkey, Iran, and Israel. Attention will be given to their roles in regional and international organizations. (Fall—evening.)
- 192 **Governments and Politics of North Africa (3)** Reich  
(Political Science 190, 191, and 192 replace former 191 and 192)  
Domestic and international politics of Algeria, Tunisia, Morocco, Libya, Egypt, and Sudan. Attention will be given to their relations with the states of the Middle East. (Spring—evening.)
- 193 **Governments and Politics of South and Southeast Asia (3)**  
(Political Science 193 and 194 replace former 194)  
Domestic and international politics of the major states in the area with particular reference to India. (Fall—evening.)
- 194 **Governments of China and Japan (3)** Michael  
(Political Science 193 and 194 replace former 194)  
Institutions and processes of government of contemporary China and Japan, with some historical background. Special attention will be paid to ideological forces. (Spring—evening.)
- 196 **Problems of Modern Political Leadership (3)**  
Lectures and discussions on problems of political leadership in developing states. (Summer 1965.)
- 197 **Proseminar: International Affairs—Strategies of Contemporary American Foreign Policy (3)** Nimer  
Analysis of diplomatic, economic, psychological, and military problems of United States foreign policy. Readings, term papers, and discussion. Primarily for seniors in the International Affairs curriculum; open to a limited number of other qualified students. (Fall—day; spring—evening; summer 1965.)
- 198 **Contemporary Trends in Political Science (3)**  
Lectures and discussions emphasizing recent developments of research and theory applicable to developing states. (Summer 1965.)



- 199 **American Government and Politics (3)** LeBlanc  
Reading and research as a basis for analyzing significant problems of American government and politics. Open to senior students in the Public Affairs and Political Science curricula. (Spring—day.)

**Third Group** 203-4 **State and Local Governments (3-3)**

*First half:* readings and group discussions on the process of politics at the state and local level. *Second half:* advanced research in selected topics of state and local politics. (Academic year—evening.)

- 209-10 **Seminar: the Federal Government of the United States (3-3)** West  
Advanced research including the legislative problems of Congress; relations of Congress with the Administration; constitutional and political powers of the President, the Cabinet, and the Executive Office of the President; the practical politics of the presidency; and presidential policy leadership and control. (Academic year—evening.)

- 211 **Readings in Comparative Government and Politics (3)** Kraus  
(Formerly Political Science 213)

Readings and group discussions on methodological questions, comparative political and administrative institutions with attention to legislatures, the changing role of the executive, political parties, constitutional and totalitarian approaches to public management and public service, the role of the military, etc. (Fall—day.)

- 212 **Seminar: Comparative Government and Politics (3)** Kraus  
Selected topics and problems on comparative political and administrative institutions and the politics of modern constitutional governments and dictatorships. Each semester is devoted to a selected country or significant institutional or policy problem. Attention will be directed to questions of method. (Spring—day.)

- 217 **Seminar: Topics in Political Theory (3)** Kraus  
Research and discussion on problems of modern political and constitutional theory, theoretical aspects of representative government, democracy, socialism, and totalitarianism. Each semester is devoted to a separately announced topic, such as socialism and communism, theories of resistance and revolution, problems of democratic theory. (Spring—evening.)

- 218 **Reading Course in Political Theory (3)** Kraus  
(Formerly Political Science 220)  
Readings and group discussions, principally on modern political and constitutional theory since the 17th and 18th centuries. (Fall—evening.)

- 221-22 **The United States Constitution and the Judicial Function (3-3)** Morgan  
Reading and research as a basis for an analysis of constitutional politics and law making. (Academic year—evening.)

- 235 **Metropolitan Problems (3)**  
Growth of American cities and changing land use patterns in relation to internal transportation systems. The respective roles of the private automobile and of public transportation. The problems of financing and administering public transportation systems under public and private ownership. (Fall—evening.)

- 245-46 **The American Political Process: Political Parties and Interest Groups (3-3)** LeBlanc  
*First half:* readings and group discussions on the nature and functions of political parties and the role and techniques of political interest groups. *Second half:* seminar on selected topics of American politics requiring the use of basic research materials. (Academic year—evening.)



- 267 **Seminar: Foreign Policy of the United States (3)** Purcell  
Research and selected reading as the basis for an analysis of the foreign policy of the United States, with particular reference to the decision-making process and the execution of policy. (Fall—evening.)
- 268 **Seminar: Comparative Foreign Policies (3)** Stout  
(Political Science 268 replaces former 274)  
Research and selected reading as the basis for an analysis of the foreign policies of major powers, with particular reference to the decision-making process and the execution of policy. (Spring—evening.)
- 271-72 **Problems in International Organization (3-3)** Ludden  
Reading and research as a basis for analyzing developments in general and regional international organizations. (Academic year—evening.)
- 273 **Public Opinion and Foreign Policy (3)** Ludden  
Development, organization, and operation of international information programs by major world powers. Public opinion in the United States influencing the formation and conduct of foreign policy. (Fall—evening.)
- 275-76 **Problems in International Politics (3-3)** Nimer  
(Political Science 275-76 replaces former 279 and 275)  
*First half:* readings and discussions to establish familiarity with both recent and older works of theoretical significance in the field of international politics. *Second half:* examination by means of individual research and class discussion of selected international political processes. Attention to factual and value problems. (Academic year—evening; summer 1965—Political Science 275 (3).)
- 277 **Seminar: Latin American Government (3)** Davis  
Analysis of the political structures of selected Latin American republics. Two comparable governments studied each year. (Fall—evening.)
- 278 **Seminar: Latin American Political Philosophy (3)** Davis  
Research in political personalities and philosophies of 19th and 20th century Latin America. (Spring—evening.)
- 281-82 **Seminar: Public International Law (3-3)** Brewer  
Research in the public law of nations, with special attention to problems of pacific settlement, sanctions, war, neutrality, and state jurisdiction, and to their political implications. (Academic year—day.)
- 290 **Reading Course in African International Politics (3)** Nimer  
Readings and discussions on selected topics in the international politics of Africa: intra-African regional relations, political unions, the African states, and the extra-continental world. (Spring—evening.)
- 291 **Government and Politics of the Middle East (3)** Reich  
(Political Science 291 and 292 replace former 292)  
Reading and research in selected problems in the government and politics and international relations of the Middle East. (Fall—evening.)
- 292 **Government and Politics of North Africa (3)** Reich  
(Political Science 291 and 292 replace former 292)  
Reading and research in selected problems in the government and politics and international relations of North Africa. (Spring—evening.)
- 293 **Seminar: Governments and Politics of South and Southeast Asia (3)** Purcell  
(Political Science 293 replaces former 293-94)  
Research and selected reading as the basis for an analysis of the structure, problems, and policies of the governments of selected countries in the area

with particular reference to India. (Spring—evening.)

299-300 Thesis (3-3)

The Staff

(Academic year—as arranged; summer 1965.)

### INSTITUTE FOR SINO-SOVIET STUDIES

- 160 *Theory and Practice of Communism* \* (3)
- 161 *Soviet Government and Politics* \* (3)
- 162 *Communist Chinese Government and Politics* \* (3)
- 215-16 *Seminar: the Sino-Soviet Blocs in World Affairs I-II* (3-3)
- 224 *Readings in Socialism and Communism* (3)
- 225 *Seminar: Theoretical Problems of Marxism-Leninism* (3)
- 227 *Seminar: the Politics of Eastern Europe* (3)
- 230 *Seminar: Operational Techniques of International Communism* (3)
- 231 *Seminar: Sino-Soviet Relations* (3)
- 232 *Seminar: International Communication—the Sino-Soviet Orbit* (3)
- 233 *Seminar: Soviet Government and Politics* (3)
- 234 *Seminar: Soviet Internal Policy* (3)
- 236 *Seminar: Trade Unions and Mass Activism in the Soviet System* (3)
- 237 *Chinese Law* (3)
- 238 *Soviet Law* (3)
- 253 *Seminar: Chinese Government and Politics* (3)
- 254 *Interuniversity Research Colloquium on Modern China* (3)
- 256 *Seminar: the Politics of North Korea and North Vietnam* (3)
- 257 *Seminar: Communism in Developing Countries* (3)
- 269 *Seminar: Soviet Foreign Policy* (3)
- 270 *Seminar: the Soviet Foreign Policy Process* (3)
- 288 *Seminar: Soviet Military Policy and Strategy* (3)
- 295 *Seminar: China in the Communist Bloc* (3)
- 296 *Seminar: the Communist Bloc in Far Eastern International Politics* (3)

### COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers political science courses listed below for students in the Air Force Advanced Management Program in the School of Government, Business, and International Affairs and the War College programs in the College of General Studies.

- 283 *Topics in International Law* † (3)
- 285 *Diplomacy since World War II* † (3)
- 287 *American Military Policy* (3)

### COURSES OFFERED IN SPECIAL PROGRAM ON DEVELOPING STATES—SUMMER 1965

- 190 *Politics of Middle and Southern Africa* (3)
- 196 *Problems of Modern Political Leadership* (3)
- 198 *Contemporary Trends in Political Science* (3)

\* Offered in a Special Program on Communist Affairs—Summer 1965.  
† Offered in the War College programs only.

## Psychology\*

*Professors* Thelma Hunt, J. L. Finan (*Chairman*), E. L. Phillips, J. N. Mosél, B. I. Levy, W. E. Caldwell, R. D. Walk, R. K. White

*Clinical Professor* I. W. Scherer

*Professorial Lecturers* Margaret Ives, A. P. Maslow

*Associate Professors* C. E. Tuthill, Eva Johnson, Virginia Kirkbride, L. E. Schlesinger (*Research*)

*Associate Clinical Professors* Katharine Beardsley, Elizabeth Broomhead, M. L. Meltzer

*Associate Professorial Lecturer* R. K. Kahn

*Assistant Professors* Lila Ghent (*Research*), R. R. Bonato (*Research*), R. H. Tanck (*Research*), C. H. Wollack

*Assistant Clinical Professors* Alice Adams, H. D. Crowley, Andrea Doman, S. B. Kopp, Boleslaus Kurpiewski, N. G. Markwell, J. M. Smothers, Mimi Spielberg

*Bachelor of Arts with a major in Psychology (Departmental).*—Prerequisite: the Arts and Letters curriculum, page 57, nine semester hours in first-group courses in Psychology, including Psychology 5–6.

The general requirements for the degree are stated on pages 63–67. The sixty required semester hours must include twenty-four hours in Psychology in addition to those taken as prerequisites, including Psychology 101, 118, 131, 151, and 196; and Statistics 53 or 104.

*Master of Arts or Master of Science in the field of Psychology.*—Prerequisite: the degree of Bachelor of Arts with a major in Psychology at this University, or the equivalent.

Required: the general requirements, pages 69–71. Of the twenty-four required semester hours (exclusive of the thesis), a minimum of eighteen must be in third-group courses; a minimum of twelve must be in Psychology including Psychology 201 and 202; twelve may be in related fields approved by the Department.

Master's programs are available in the following fields of concentration: (1) tests and measurements, (2) clinical, (3) social, (4) personnel, (5) experimental, (6) personality, and (7) experimental comparative. For detailed requirements consult the Chairman of the Department.

*Master of Arts in the field of Linguistics.*—See pages 258–59 and the departments of Germanic Languages and Literatures and Romance Languages and Literatures.

*Doctor of Philosophy.*—See pages 75–84.

*Master of Arts in Government, Master of Business Administration, or Master of Public Administration in the field of Personnel Administration.*—See pages 125–27, 130, 131–32, 134.

*Master of Arts in Education in the fields of Employee Training, Guidance, and Student Personnel Work in Higher Education.*—Prerequisite: a Bachelor's degree from an accredited institution and two years of successful teaching experience. See pages 103–5.

### 1 General Psychology † (3)

The fundamental principles underlying human behavior. (Fall and spring —day and evening; summer 1965.)

The Staff First Group

\* Staff of Instruction for the academic year 1964–65.

† Psychology 1 or 5–6 is prerequisite to all other courses in Psychology.



- 5-6 **Principles and Methods of Psychology \*** (3-3) Walk and Staff  
Lecture (2 hours), laboratory (2 hours). An experimental approach to the understanding of behavior. A variety of individual and class experiments are performed. Prerequisite for freshmen: Psychology 1. Required of all psychology majors, who should take the course early in the major. *First half:* awareness, discrimination, sensation, perception, and emotions and their relation to adaptive behavior. *Second half:* topics of motivation, learning, memory, and problem solving. (Academic year—day and evening.)
- 8 **Psychology of Adjustment** (3) The Staff  
(Formerly Psychology 4)  
Processes involved in the total adjustment of the individual with emphasis on social environment; development in the individual of adjustment techniques. (Fall and spring—day and evening; summer 1965.)
- 22 **Introduction to Educational Psychology** (3)  
Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training. (Fall—evening; spring—day; summer 1965.)
- 29 **Psychology of Childhood** (3) Johnson  
A genetic approach to the study of the child. Special emphasis is placed on the socialization process, learning, and the child's view of the world. (Fall—day; spring—evening; summer 1965.)
- Second Group †* 101 **Abnormal Psychology** (3) Hunt and Staff  
The causes, diagnosis, treatment, and prevention of the various types of maladjustments and mental disorders. Prerequisite: 6 credits in psychology, or 3 credits in psychology and 6 credits in a biological science. (Fall—day and evening; spring—day; summer 1965.)
- 112 **Psychology of Adolescence** (3) Johnson  
Psychological characteristics and problems peculiar to adolescence, with emphasis on applications of psychology to solution of such problems. (Fall—day.)
- 115 **Psychology of Language and Communication** (3) Mosél  
An introduction to psycho-linguistics and verbal behavior. Information theory, the measurement of meaning, cultural and linguistic structures in the perception and learning of language. (Fall—day.)
- 118 **Physiological Psychology** (3) Finan  
Basic structure and functions of sensory systems, motor systems, central nervous system, autonomic nervous system, and endocrine system with special emphasis upon the relations between physiological functioning and behavior. (Fall—evening; spring—day; summer 1965.)
- 121 **Psychology of Learning** (3) Finan  
(Formerly Educational Psychology)  
Current learning theories and issues. (Fall—day; summer 1965.)
- 129 **Motivational Factors in Personality** (3) Kirkbride  
(Formerly Introduction to Counseling)  
A survey of basic principles and assessment techniques, with emphasis on applications to counseling. (Fall—evening.)
- 131 **Psychological Tests** (3) Hunt  
A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, \$7. (Fall—day; spring—evening; summer 1965.)

\* Psychology 1 or 5-6 is prerequisite to all courses in Psychology.

† Six credits in first-group courses are prerequisite to all second-group courses.

- 144 **Personnel Psychology (3)** Mosé  
Psychological concepts and techniques in personnel management and supervision. Applications to government, industry, and military organizations. (Fall and spring—evening.)
- 148 **Psychology of Advertising and Consumer Behavior (3)**  
The motivational and social processes in economic behavior. Consideration of current techniques and findings in motivational research. Evaluation of the effectiveness of mass media, public relations programs, and strategies of persuasion. (1965-66 and alternate years: fall—evening.)
- 151 **Social Psychology (3)** Tuthill, White  
The social foundations of attitudes and behavior: cognition, motivation, role-behavior, communication, small-group processes, racial attitudes, nationalism, and war. (Fall—evening; spring—day; summer 1965.)
- 156 **Psychology of Propaganda and Public Opinion (3)** Tuthill  
The psychology of opinion formation, the measurement of opinion, the social determinants of attitudes, the psychological processes in propaganda, the bases of receptivity of propaganda, psychological warfare. (1966-67 and alternate years; summer 1965.)
- 161 **Comparative Psychology (3)** Caldwell  
A lecture course in animal psychology. Covers psychological processes in inhuman organisms, evolution of behavior, the place of animal experimentation, and research in psychology. (Spring—day.)
- 191-92 **Research Problems in Psychology (3-3)** The Staff  
Opportunity for work on individual projects using human or lower animal subjects. Offered on individual study plan. Open to qualified students by special permission of the instructor. (Academic year—as arranged.)
- 193-94 **Readings in Psychology (3-3)** The Staff  
Supervised readings on specific topics in psychology, with conferences, for undergraduate majors. Open only to seniors with 18 or more credits in psychology with a quality-point index of 3.00 or higher. Admission by special permission of the instructor. (Academic year—as arranged; summer 1965.)
- 196 **History and Systems of Psychology (3)** Caldwell and Staff  
A senior capstone course which includes a survey and integration of the major viewpoints and concepts of psychology. Open to senior majors and, by special permission of the instructor, to other students with 12 or more credits in psychology. (Fall—day; spring—evening; summer 1965.)
- 198 **Current Research Issues in Psychology (3)** Walk  
Class will be conducted as a seminar and will consider recent experiments in psychology, including those performed by undergraduates. Emphasis is on student participation. Open only to senior psychology majors. (Spring—day.)
- 201 **Advanced General Psychology (3)** Third Group \*  
An integrated review of history, theory, and facts in the area of general psychology: perception, motivation, learning, and cognition. Required of all psychology Master's candidates. (Fall—day; spring—evening.)
- 202 **Psychological Research Methods and Procedures (3)** Walk  
Required in all graduate programs. Prerequisites: Experimental Psychology and an elementary course in statistics. (Fall—evening; spring—day.)

\* Open only to graduate students, except by special permission of Instructor and Chairman of the Department.

- 207-8 **Readings in Psychology for Graduate Students (3-3)** The Staff  
Supervised readings with conferences on specified topics in psychology. Open only to students who have had course work in the field of the readings. (Academic year—as arranged; summer 1965.)
- 209 **Seminar: Psychology of Motivation (3)** Caldwell  
A consideration of various theoretical approaches to the psychology of motivation and systematic concepts and experimental findings deriving from each approach. (1966-67 and alternate years.)
- 212 **Personality Evaluation by Projective Techniques \* (3)** Levy  
Primary emphasis upon administration and scoring of the Rorschach Test. Prerequisite: Psychology 233. (Fall—day; spring—evening; summer 1965.)
- 213 **Clinical Psychometrics \* (3)** Ives  
A study of the clinical applications of nonprojective tests. Prerequisite: Psychology 233. (Spring—evening.)
- 215 **Advanced Study of Projective Techniques \* (3)** Ives  
Primary emphasis upon interpretation of the Rorschach Test. Prerequisite: Psychology 212. (Fall—evening; spring—day.)
- 217 **Seminar: Developmental Psychology (3)** Ghent  
(Fall—day.)
- 220 **Seminar: Abnormal Psychology \* (3)** Hunt  
An intensive study of selected problems in the field of abnormal psychology. (Fall—day; spring—evening.)
- 223 **Seminar: Learning (3)** Finan  
Selected topics in the psychology of learning. (Spring—evening.)
- 225 **Seminar: Psychology of Adjustment and Mental Hygiene (3)**  
A study of mental health problems with special attention to needs of counselors, teachers, and others working with children and adolescents. (Fall—evening; spring—day; summer 1965.)
- 226 **Seminar: Clinical Psychology of Childhood and Adolescence (3)** Johnson  
A survey of behavior and personality disorders. (Spring—evening.)
- 227-28 **Seminar: Variations in Psychotherapeutic Approach (3-3)** Kahn  
A study of patient needs and demands upon the therapist. Case participation will be heavily relied upon. Open to qualified students in psychology and related fields, with permission of the instructor. (Academic year—day.)
- 231 **The Construction of Quantitative Instruments (3)** Mosel  
Psychometric procedures for constructing and evaluating tests and other devices to measure and predict ability and personality variables for both applied and research purposes. Criterion development, quantification of judgments, item analysis, and multiple-predictor systems. Prerequisite: a course in tests and measurements and an elementary course in statistics. (Fall—evening.)
- 233 **Individual Psychological Testing \* (3)** Johnson  
Instruction and practice in giving of the Binet and Wechsler tests. Prerequisite: an elementary course in tests and measurements. Material fee, \$7. (Fall and spring—day.)

\* Offered provisionally pending revision of the clinical curriculum for 1965-66.



- 234 **Seminar: Test Theory (3)** Mosél  
Development of the axiomatic-deductive theory underlying the major notions in the construction, evaluation, and application of psychological tests. (1966-67 and alternate years; summer 1965.)
- 235 **Seminar: Psychological Measurement \* (3)** Hunt  
Advanced instruction in the use and interpretation of psychological tests, with emphasis upon group tests; survey of recent research in psychological measurement. Prerequisite: a course in psychological or educational measurement. (1966-67 and alternate years.)
- 244 **Seminar: Job and Worker Analysis (3)** Mosél  
An examination of the principles, techniques, and research findings in the description of work performed and in the analysis of qualifications requirements. (Summer 1965.)
- 245 **Seminar: Employee Motivation and Morale (3)** Mosél  
An analysis of organizational behavior, especially with regard to motivation and productivity. The implications of recent research on employee attitudes, the primary group, the effects of various patterns of supervisory leadership, the role of formal and informal organization, and job design. (Spring—day and evening.)
- 246 **Seminar: Personnel Measurement Techniques (3)** Mosél  
Detailed consideration of the techniques of personnel selection and performance evaluation. The use of employment tests, personal data, assessment interviews, and performance ratings. (1965-66 and alternate years: fall—evening.)
- 249 **Seminar: Psychological Factors in Design and Operation of Man-Machine Systems (3)** Finan  
Includes consideration of psychotechnology versus theoretical psychology, system methodology, personnel selection and utilization, information displays and controls, training, decision making, stress and vigilance, simulation, and evaluation of system performance. Open to qualified students in psychology and engineering, with permission of the instructor. (Fall—evening.)
- 251 **Seminar: Advanced Social Psychology (3)** Tuthill  
Current research and theory in social psychology: group dynamics, ego-involvements, action research, and social interaction theory. (Fall—evening.)
- 252 **Research Methods in Social Psychology** White  
Practice, under guidance, in interviewing methods, questionnaire construction, content analysis, and report writing; briefer consideration of other research techniques. Prerequisite: Psychology 202. (Spring—day.)
- 254 **Seminar: Group Dynamics (3)** Tuthill  
The experimental study of small groups; autocratic and democratic group climates; interaction process analysis. Lewin's field-theoretical approach to individual and group processes. (1965-66 and alternate years: spring—day.)
- 255 **Seminar: Techniques of Opinion and Attitude Measurements (3)** Tuthill  
Methods of attitude measurement (interviews, questionnaires, scales, polls) as currently used by private and governmental investigators. The place of attitude studies in schools, industry, government, etc. (1966-67 and alternate years.)

\* Offered provisionally pending revision of the clinical curriculum for 1965-66.

- 267 **Theories of Organization (3)** Schlesinger  
Theory and research in formal organizations. Classical, human relations, and information processing theories of organizations. The effects of organizational design on communication processes, leadership, decision making, intergroup relations, small group formation, status hierarchies, productivity, motivation, and morale. Open to graduate students in psychology and graduate administrative programs. (Spring—evening.)
- 272 **Seminar: Theories of Personality (3)** Caldwell  
A survey of the various theories of personality, with emphasis upon theoretical problems and methodology in the field of personality study. (Fall—evening; summer 1965.)
- 281-82 **Practicum in Counseling \* (3-3)** Phillips  
Supervised practical instruction in agencies doing counseling. Prerequisite: graduate work in counseling. Admission by permission of the instructor. (Academic year—as arranged.)
- 283-84 **Practicum in Clinical Psychology (3-3)** Levy  
Supervised practical instruction in agencies doing clinical psychological work. Prerequisite: Psychology 212. Admission by permission of the instructor. (Academic year—as arranged; summer 1965.)
- 289-90 **Seminar: Current Research and Theory in Psychology (3-3)**  
A review and discussion of contemporary research and theory in some advanced and specialized field of psychological study, by leaders in the field. The specific topic and instructor for each semester will be announced in advance of the beginning of the semester. (Academic year—evening; summer 1965.)
- 292 **Seminar: Perception (3)** Walk  
Study of current research and theory in the experimental psychology of perception. (1966-67 and alternate years.)
- 295-96 **Research in Psychology (arr.)** The Staff  
Individual research by student, carried out under supervision of staff member. (Academic year—as arranged; summer 1965.)
- 297-98 **Seminar: Concepts of Psychology (4-4)** Finan and Staff  
Lecture (1 hour), dialogue (1 hour), discussion (1 hour). An overview and analysis of the concepts and major areas of psychology. Designed as a review and integration of knowledge for the Ph.D. candidate preparing for the Comprehensive Examination in general psychology and as a preparation for specialized study and individual research. Required of all Doctoral candidates in psychology. Admission by permission of the instructor. (Academic year—evening.)
- 299-300 **Thesis (3-3)** The Staff  
(Academic year—as arranged; summer 1965.)

#### **COURSES OFFERED IN COOPERATION WITH OTHER SCHOOLS, COLLEGES, AND DIVISIONS OF THE UNIVERSITY**

In addition to the regular courses announced above the University offers the following courses in conjunction with special programs in schools, colleges, and divisions of the University other than Columbian College of Arts and Sciences.

- 145 **Principles of Human Relations (3)** (School of Engineering and Applied Science) Grossnickle
- 149 **Human Relations in Management (3)** (College of General Studies)

\* Offered provisionally pending revision of the clinical curriculum for 1965-66.

- 245 **Employee Motivation and Morale (3)** Mosél  
Especially for students in the School of Government, Business, and International Affairs. (Spring—day and evening.)
- 259 **Seminar: Social Psychology of Communism (3)** White  
Psychological aspects of authoritarian systems and of all-embracing political ideologies; methods and findings in the study of public opinion in the USSR and its satellites; problems of Western communications with the USSR; the nature of Communist propaganda and the appeals of Communism in non-Communist countries. Especially for students in the Institute for Sino-Soviet Studies. (Fall—evening.)
- 261 **Seminar: International Communication (3)** Mosél  
The process of communicating information and effecting attitude change across cultures by means of mass media. Special emphasis is given to the role of psychocultural factors and the functions of mass communication in the development of transitional societies. Especially for students in the School of Government, Business, and International Affairs. (1966-67 and alternate years.)
- 262 **Behavioral Factors in Social Change (3)** Lippitt  
Current research and theory related to the process of social change. Basic principles of planned change will be explored with individual, group, organization, community, and cultural change. Human factors in the change process will be emphasized. Especially for students in the Center for Behavioral Sciences. (Spring—evening.)
- 264 **Sensitivity Training: Human Relations Laboratory Course (3)** Lippitt  
A sensitivity learning experience in human relations. The course is built around an unstructured group experience with opportunities for individual feedback, experimentation, and practice. The goal of the course is the development of self-insight, situational sensitivity, and diagnostic skills in human relations. Prerequisite: 9 semester hours in psychology or sociology. Especially for students in the Center for Behavioral Sciences. (Fall—evening.)

## Religion\*

*Professors* J. R. Sizoo, R. G. Jones (*Chairman*)

*Assistant Professors* H. E. Yeide, Jr., D. D. Wallace, Jr.

*Assistant Professorial Lecturers* E. W. Seaman, Damian McElrath

*Bachelor of Arts with a major in Religion (Field-of-Study).*—Prerequisite: the Arts and Letters curriculum, page 57, including Religion 9, 10, and 59-60.

Required: the general requirements, pages 63-67, and the passing of the Religion major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes the history and literature of the world's religions with special emphasis on those of the West and the philosophical and ethical problems of religious thought. A student may elect to give special emphasis in his program to Christianity or to Judaism. The Department of Religion provides a proseminar (Religion 199-200) intended to assist the student in preparing for the major examination. A pamphlet containing a detailed description of the major is available in the offices of the Dean of Columbian College of Arts and Sciences and the Chairman of the Department of Religion.

American Thought and Civilization 101 *American Civilization* is recommended as a senior-year elective for Religion majors.

\* Staff of Instruction for the academic year 1964-65



*Master of Arts in the field of Religion.*—Prerequisite: an undergraduate major in Religion at this University, or the equivalent.

Required: the general requirements, pages 69–71. Of the twenty-four semester hours of required courses (exclusive of the thesis), at least twelve must be in third-group religion courses; a maximum of nine may be in a closely related field outside the Department of Religion as approved by the Department.

*Master of Arts in the field of Religious Education.*—Prerequisite: an undergraduate major in Religion at this University or the equivalent; the following specific courses or the equivalent: Education 108; Psychology 1, 22, and 29; Anthropology 1; Speech 1 or 11.

Required: the general requirements, pages 69–71. Of the twenty-four semester hours of required courses (exclusive of the thesis), at least six must be in third-group religion courses; a maximum of twelve may be in a closely related field outside the Department of Religion as approved by the Department.

*Doctor of Philosophy in the field of the History of Religion in the United States.*—See pages 75–84.

- |                     |   |
|---------------------|---|
| <b>First Group</b>  | <p><b>9 The Old Testament (3)</b> Jones and Staff<br/>A historical and literary approach to the study of the books of the Old Testament with special consideration given to the development of religious ideas, institutions, and outstanding personalities. (Fall—day and evening.)</p> <p><b>10 The New Testament (3)</b> Jones and Staff<br/>A study of the literature of the New Testament from the standpoint of occasion, purpose, dominant ideas, and permanent values. Special emphasis on the approach, the structure, and the significance of the Gospels and Epistles. (Spring—day and evening; summer 1965.)</p> <p><b>59–60 History of Religions (3–3)</b> Wallace, Yeide<br/><i>First half:</i> primitive and ancient national religions: Confucianism, Taoism, Buddhism, Hinduism, and Shintoism—their historical setting, founders, and development of religious thought and culture. <i>Second half:</i> Zoroastrianism, Judaism, Christianity, and Islam—analysis of their origin, evolution, and contemporary status. (Academic year—day and evening; summer 1965.)</p>  |
| <b>Second Group</b> | <p><b>103 The Prophets, Their Times and Their Message (3)</b> Jones<br/>The development of prophetism in the Old Testament; cultural, economic, psychological, and religious factors in the movement; elements of lasting value in the prophetic teaching. A few of the prophets will be selected for particular study. (Summer 1965.)</p> <p><b>104 The Life and Thought of Jesus (3)</b> Yeide<br/>A comprehensive study of the life and teachings of Jesus with critical attention to the sources and special emphasis on the central concepts in the message of Jesus. (Spring—evening.)</p> <p><b>105 The Life and Thought of Paul (3)</b> Yeide<br/>Greek and Hebrew backgrounds of early Christianity, the Roman world of the first century, religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's teaching and presentation of the Christian faith, the place of the Pauline epistles in the New Testament. (Fall—evening.)</p> <p><b>121 Philosophical Problems of Western Religious Thought (3)</b><br/>Survey of selected classical and contemporary religious thinkers with special reference to such problems as: the nature of religious truth and experience, the existence, character, and activity of God; the predicament of man; the</p> |

problem of evil and suffering; science and religion; religious views of history. (Not offered 1965-66.)

- 122 **Christian Ethics and Modern Society** (3) Yeide  
The nature and principles of the Christian life as developed by the Christian community; problems of personal conduct; the application of the Christian standard to family, social, and economic institutions. (Spring—day; summer 1965.)
- 131 **History of Christianity to the Reformation** (3) Wallace  
The rise and expansion of Christianity, the development of Christian thought, the evolution of church organization and worship, the Renaissance and pre-Reformation dissent. (Fall—day.)
- 132 **History of Modern Christianity** (3) Wallace  
The origin and development of Protestantism; the Roman Catholic revival; the status of the Eastern churches; doctrines, worship, expansion, church and state, and relation to modern thought and life. (Spring—day; summer 1965.)
- 135 **History of Judaism to the Talmud** (3) Seaman  
A study of the history and religious thought of the Jewish people from the Maccabean revolt to the compilation of the Talmud. (Fall—day.)
- 136 **History of Medieval and Modern Judaism** (3) Seaman  
A study of the history and religious thought of the Jewish people from the compilation of the Talmud to the present. (Spring—day.)
- 141-42 **Religious Education** (3-3)  
Principles and practices of religious education in the home, church, and community; basic educational procedures and special techniques; organization and administration of religious education. (Not offered 1965-66.)
- 172 **Religion in American Culture** (3) Wallace  
Growth of religious bodies and institutions in American culture, the heritage of religious freedom and diversity, the development of religious thought, and analysis of the contemporary religious scene. (Spring—day.)
- 199-200 **Proseminar: Readings for the Religion Major** (3-3) Yeide, Jones  
Readings and group discussions. (Academic year—as arranged.)
- 209-10 **Seminar: Biblical Literature** (3-3) *Third Group*  
Study of the main problems of Biblical literary and historical criticism. (Not offered 1965-66.)
- 211-12 **Seminar: Biblical Thought** (3-3) Jones  
Study of the Biblical interpretation of history and reality and its relation to Biblical beliefs about God, man, and the world. (Academic year—evening.)
- 222 **Seminar: Christian Ethics** (3) Yeide  
Study of important tendencies in the ethical reflection of the contemporary Christian Church, giving special attention to the contributions of the social sciences to that reflection. (Not offered 1965-66.)
- 231-32 **Seminar: Early and Medieval Christianity** (3-3)  
An advanced study of the development of Christian thought from primitive beginnings to the Reformation. (Not offered 1965-66.)
- 233-34 **Seminar: Reformation and Modern Christianity** (3-3) Yeide, Wallace  
Analysis of developments in Western religious thought from the 16th century to the present. (Academic year—evening.)

- 241-42 **Seminar: Religious Education (3-3)**  
Advanced course dealing with some of the major problems in the practice of religious education. (Not offered 1965-66.)
- 271 **Seminar: American Religious History to 1830 (3)** Wallace  
Study of religious thought and life during the Colonial and early national period. (Fall-evening.)
- 273 **Seminar: American Religious History since 1830 (3)**  
Analysis of modern and contemporary trends in American religious thought. (Not offered 1965-66.)
- 291-92 **Readings and Research (3-3)** The Staff  
Investigation of special problems in the history of religion. (Academic year—as arranged; summer 1965.)
- 299-300 **Thesis (3-3)** The Staff  
(Academic year—as arranged; summer 1965.)

#### RELATED COURSES IN OTHER DEPARTMENTS

Art 115 *Christian Iconography* (3)  
Classical Languages and Literatures 11-12 *First-year Greek* (3-3)  
Classical Languages and Literatures 13-14 *Second-year Greek* (3-3)  
Classical Languages and Literatures 21-22 *First-year Classical Hebrew* (3-3)  
Classical Languages and Literatures 23-24 *Second-year Classical Hebrew* (3-3)  
Sociology 125 *Sociology of Religion* (3)

### Romance Languages and Literatures\*

*Professors* G. E. McSpadden, L. A. Vigneras, Rafael Supervía, W. G. Clubb (*Chairman*)

*Associate Professors* J. W. Robb, G. E. Mazzeo, J. A. Frey, J. L. Metivier, Jr., James Burks

*Assistant Professors* Fred Abrams, Elizabeth Neyman, R. M. Riggs

*Assistant Professorial Lecturer* Esther Lawton

*Instructors* G. P. Huvé, Eulogia Llansa, Ruth Weinreb, Elizabeth Burkley, Cecilia Uribe, Anne Cordero, Julia Hicks

*Language Workshop Supervisor* W. H. Ausman

Courses are generally conducted in the language concerned. For General Courses in Romance Languages and Literatures (French, Italian, Portuguese, Spanish), see pages 309-10.

*Bachelor of Arts with majors in* (1) *French Language and Literature*, (2) *Spanish-American Literature*, and (3) *Spanish Language and Literature (Field-of-Study)*.—Prerequisite: the Arts and Letters curriculum, page 57.

Required: the general requirements, pages 63-67, and the passing of the major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes the political, social, and cultural backgrounds of the literature studied; the writers and their works. Proficiency in the spoken and written language is required.

\* Staff of Instruction for the academic year 1964-65



Majors in Romance Languages are strongly advised to study Latin, a knowledge of which is generally required for graduate work. The Department provides a proseminar in each of the major fields intended to assist the student in his preparation for the major examination.

*Master of Arts in the fields of (1) French Language and Literature, (2) Spanish-American Literature, and (3) Spanish Language and Literature.*—Prerequisite: the degree of Bachelor of Arts in the appropriate field from this University, or the equivalent.

Required: the general requirements, pages 69–71. The thirty hours of required work must include a thesis, for which six hours of credit are allotted. The remainder of the program is arranged in consultation with the student's major adviser.

*Master of Arts in the field of Linguistics (an interdepartmental degree offered by the departments of Germanic Languages and Literatures and Romance Languages and Literatures).*—Prerequisite: a Bachelor of Arts degree, preferably with a major in French, German, or Spanish at this University, or the equivalent, and the approval of candidacy by the Committee on Linguistic Study.

Required: the general requirements, pages 69–71, including a thesis and twenty-four semester hours of second-group courses selected in consultation with the chairman of the department directing the Master's program and approved by the Committee on Linguistic Study. The candidate's program will normally be selected from courses in Anthropology, English, French, German, Mathematics, Philosophy, Psychology, Russian, Spanish, Speech, and Statistics listed on pages 258–59.

*Doctor of Philosophy.*—See pages 75–84.

*Bachelor of Arts in Education with teaching fields in French and in Spanish.*—Prerequisite: the Education curriculum, page 59.

Required: the French option or the Spanish option and the professional courses listed on page 99.

## FRENCH

### 1–2 First-year French (3–3)

The Staff *First Group*

A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern French prose. Aural training, oral practice in electronic language workshop. Workshop fee, \$6 a semester. (*First half:* fall and spring—day and evening, summer 1965. *Second half:* fall and spring—day and evening; summer 1965.)

### 2x First-year French (3)

Riggs and Staff

An intensive course to which are assigned entering students with one or more years of high school French whose placement tests show them inadequately prepared for the regular work of French 3. The course meets six hours a week (3 hours of lecture, 2 hours of drill, and 1 hour of workshop) and carries 3 semester hours of credit. The total fee is \$163 (the tuition fee of \$138 plus an additional fee of \$25) plus workshop fee, \$6. (Fall and spring—day.)

### 3–4 Second-year French \* (3–3)

The Staff

A year course: credit is not given for the first half until the second half is completed. Conversation, grammar, composition, reading in modern French prose, introduction to French civilization. Aural training, oral practice in electronic language workshop. Workshop fee, \$6 a semester. Prerequisite: French 1–2, 2x, or two years of high school French. (*First half:* fall and spring—day and evening, summer 1965. *Second half:* fall—day; spring—day and evening; summer 1965.)

\* French 3–4 or 6 is required, and French 51 52 is recommended, as prerequisite to all second-group courses.

- 6 Second-year French \* (6)** **The Staff**  
Lecture (3 hours), discussion (3 hours). An intensive, accelerated course which covers the material of French 3-4. Grammar review, reading, conversation. Prerequisite: two years of high school French or a grade of B or better in French 2 or 2x. (Fall and spring—day.)
- 9-10 French Conversation and Composition (3-3)** **The Staff**  
Prerequisite: French 4 or the equivalent and permission of the instructor. (Academic year—day and evening; summer 1965.)
- 49 French Readings for Nonmajor Students (3)** **Lawton and Staff**  
Primarily for graduate students preparing for reading examinations. Undergraduates admitted only with specific permission of the instructor. No academic credit for graduate students. (Fall and spring—evening; summer 1965.)
- 51-52 Survey of French Literature and Civilization \* (3-3)** **Metivier**  
The social, artistic, and cultural background of French civilization. Lectures, readings, recitations, and informal discussions. (Academic year—day and evening; summer 1965.)
- Second Group \***
- 103 Problems of Pronunciation and Intonation (3)** **Vignerass**  
Recommended for majors and required for a Bachelor of Arts in Education degree with a teaching field in French. (Fall—day.)
- 109-10 Advanced French Conversation and Composition (3-3)** **Vignerass**  
Normally diction will receive greater emphasis in the fall semester and style in the spring semester. Prerequisite: French 10 or the equivalent and permission of the instructor. (Academic year—day; summer 1965.)
- 119-20 French Literature of the 16th Century (3-3)** **Metivier**  
Prose, poetry, drama, and memoirs of the French Renaissance; Rabelais, Montaigne, Marot, La Pléiade, etc. Class analysis of texts, collateral reading. (1965-66 and alternate years: academic year—day.)
- 121-22 French Literature of the 17th Century (3-3)** **Riggs**  
History, philosophy, criticism, memoirs, letters, eloquence, drama, fiction, poetry. Class analysis of texts; collateral readings. (1966-67 and alternate years.)
- 123-24 French Literature of the 18th Century (3-3)**  
History, philosophy, criticism, letters, drama, fiction, poetry, the "salons", the idea of progress, the idea of science. Class analysis of texts, collateral reading, lectures on literature and history. (1965-66 and alternate years: academic year—evening.)
- 125-26 French Literature of the 19th Century (3-3)** **Frey**  
Romanticism and realism: fiction, poetry, drama, criticism. Class analysis of texts, collateral reading, lectures on literature and history. (1966-67 and alternate years.)
- 127-28 French Literature of the 20th Century (3-3)** **Clubb**  
Fiction, poetry, drama, criticism. Class analysis of texts, collateral reading, lectures on literature and history. (1965-66 and alternate years: academic year—evening.)
- 129-30 Contemporary French Literature (3-3)** **Clubb**  
Existentialism and surrealism in the novel, poetry, and drama from 1918 to the present. Lectures, discussions, and reports. (Summer 1965—French 129 (3).)

\* French 3-4 or 6 is required, and French 51-52 is recommended, as prerequisite to all second-group courses.



- 199-200 **Proseminar: Readings for the Major in French Language and Literature (3-3)** Burks  
Conferences and group discussions. (Academic year—as arranged.)
- 202 **History and Methods of Literary Analysis and Criticism (3)** Frey *Third Group*  
Literary criticism from Aristotle to the New Critics. Methods to be demonstrated and applied to selected passages from French literature. Emphasis on technique known as *explication de texte*. (Offered 1966-67.)
- 212 **Historical French Grammar (3)** Vigneras  
The phonology, morphology, and syntax of Old French, and its development from Vulgar Latin. Practical exercises based on texts. Prerequisite: a second-group course in French literature, Romance 279 *Introduction to Romance Philology and Linguistics* (see General Romance Courses), and an elementary knowledge of Latin. (Offered 1966-67.)
- 213-14 **Old French (3-3)** Vigneras  
French literature to the end of the Middle Ages. Prerequisite: a second-group course in French literature and the permission of the instructor. (Academic year—day.)
- 224 **Seminar: the Age of Rabelais (3)** Burks  
Humanism and the Reformation in French letters. Rabelais and the *conteurs*. Poetry to the *Pléiade*. Research projects, papers, reports. (Fall—day.)
- 225 **Seminar: the Age of Montaigne (3)** Burks  
Montaigne: the man and the development of his thought. Poetry from the *Pléiade* to Malherbe. Drama. Research projects, papers, reports. (Spring—day.)
- 227 **Seminar: the Renaissance in Europe (3)** Burks  
The sources and nature of literary trends in Western Europe from Dante to Calderón, and their relationship to French literature. Readings, papers, and discussion. (1966-67 and alternate years.)
- 231-32 **Theater in the 17th Century (3-3)** Clubb  
A survey of the development of theatrical arts and the drama. Research papers and reports. Prerequisite: French 121-22 or the equivalent. (1966-67 and alternate years.)
- 234 **Nondramatic Literature of the 17th Century (3)** Clubb  
Rationalism and the revolt against authority expressed in literature. Development of classical doctrine. Discussion of texts and collateral readings. (Spring—day.)
- 241 **The Rationalistic Current in the 18th Century (3)**  
Bayle, Fontenelle, Montesquieu, Voltaire, Rousseau, as philosophers, dramatists, and critics of their age, their contributions to the intellectual evolution of France and Europe. (Fall—day.)
- 242 **Seminar: the French Novel in the 18th Century (3)**  
Development of the novel in France from *La Princesse de Clèves* to the French Revolution; themes and techniques. (Offered 1966-67.)
- 244 **Seminar: Diderot and the Encyclopedia (3)**  
Diderot's contribution to 18th century novel, drama, and aesthetic criticism; the Encyclopedia as embodiment of 18th century thinking. (Spring—day.)
- 250 **Romanticism in France (3)** Frey  
The theory and practice of romanticism in France: romantic love, the



Napoleonic myth, exoticism, local color, sensationalism, and religiosity as reflected in new styles of prose and poetry. Romantic criticism. The preparation for realism. (Offered 1966-67.)

- 251 **Naturalism** (3) Frey  
Development of theory and style; influence of history, science, philosophy, and art on literary naturalism. Naturalistic criticism. (Spring—day.)
- 252 **Flaubert and French Realism** (3) Frey  
Prose style in the novel from Balzac to Flaubert with emphasis on the latter; literary doctrines of realism and its stylistic techniques; the works of Balzac, Stendhal, Mérimée, Gautier, Flaubert, and selected correspondence. (Offered 1966-67.)
- 253 **Seminar: Symbolism in Poetry** (3) Clubb  
The origin and nature of symbolism from Mallarmé to Valéry. Class analysis of texts and reports. Prerequisite: French 127-28 or the equivalent. (Offered 1966-67.)
- 254 **Seminar: Victor Hugo** (3) Frey  
Hugo and the development of the romantic ideal in prose and poetry; Hugo and romantic theater and criticism. Analysis, classification, and criticism of romantic themes and techniques in the works of Hugo; contemporary Hugo criticism. (Offered 1966-67.)
- 255 **Seminar: Stendhal and Le Bèylisme** (3) Frey  
Stendhal's novels and autobiographical works. Stendhal and Italy. Readings, discussions, and papers. (Fall—day.)
- 256 **Nineteenth Century French Literature** (3)  
Poetry, prose, and drama, 1830-1900. Development of literary styles. Class discussions and reports. (Summer 1965.)
- 264 **Seminar: Modern Period** (3) Clubb  
Poetry, prose, drama. (Offered 1966-67.)
- 299-300 **Thesis** (3-3) The Staff  
(Academic year—as arranged; summer 1965.)

## ITALIAN

- First Group* 1-2 **First-year Italian** (3-3) The Staff  
A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern Italian prose. Aural training, oral practice in electronic language workshop. Workshop fee, \$6 a semester. (Academic year—day and evening; summer 1965.)
- 3-4 **Second-year Italian** (3-3) The Staff  
A year course: credit is not given for the first half until the second half is completed. Conversation, grammar, composition, reading in modern Italian prose, introduction to Italian civilization. Aural training, oral practice in electronic language workshop. Workshop fee, \$6 a semester. Prerequisite: Italian 1-2 or two years of high school Italian. (Academic year—day.)

## SPANISH

- First Group* 1-2 **First-year Spanish** (3-3) The Staff  
A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern Spanish prose. Aural training, oral practice in electronic language workshop. Workshop fee, \$6 a semester. (First

*half: fall and spring—day and evening; summer 1965. Second half: fall and spring—day and evening; summer 1965.)*

**2x First-year Spanish (3)**

Neyman and Staff

An intensive course to which are assigned entering students with one or more years of high school Spanish whose placement tests show them inadequately prepared for the regular work of Spanish 3. The course meets six hours a week (3 hours of lecture, 2 hours of drill, and 1 hour of workshop) and carries 3 semester hours of credit. The total fee is \$163 (the tuition fee of \$138 plus an additional fee of \$25) plus workshop fee, \$6. (Fall and spring—day.)

**3-4 Second-year Spanish \* (3-3)**

The Staff

A year course: credit is not given for the first half until the second half is completed. Conversation, grammar, composition, reading of modern Spanish prose, introduction to Hispanic civilization. Aural training, oral practice in electronic language workshop. Workshop fee, \$6 a semester. Prerequisite: Spanish 1-2, 2x, or two years of high school Spanish. (*First half: fall and spring—day and evening; summer 1965. Second half: fall—day; spring—day and evening; summer 1965.)*)

**6 Second-year Spanish \* (6)**

The Staff

Lecture (3 hours), discussion (3 hours). An intensive, accelerated course which covers the material of Spanish 3-4. Grammar review, reading, conversation. Prerequisite: two years of high school Spanish or a grade of B or better in Spanish 2 or 2x. (Fall and spring—day.)

**9-10 Spanish Conversation and Composition (3-3)**

The Staff

Prerequisite: Spanish 4 or the equivalent and permission of the instructor. (Academic year—day and evening; summer 1965.)

**49 Spanish Readings for Nonmajor Students (3)**

The Staff

Primarily for graduate students preparing for reading examinations. Undergraduates admitted only with specific permission of the instructor. No academic credit for graduate students. (Fall and spring—evening.)

**51-52 Survey of Spanish Literature and Civilization \* (3-3)**

Supervía

The social, artistic, and cultural background of Spanish civilization. Lectures, readings, recitations, and informal discussion. (Academic year—day and evening; summer 1965.)

**103 Problems of Pronunciation and Intonation (3)**

McSpadden *Second Group \**

Descriptive and practical review of Spanish sounds and inflections. Remedial exercises. Recommended for majors and required for the Bachelor of Arts in Education degree with a teaching field in Spanish. (Fall—day; summer 1965.)

**109-10 Advanced Spanish Conversation and Composition (3-3)**

Mazzeo

Normally diction will receive greater emphasis in the fall semester and style in the spring semester. Prerequisite: Spanish 10 or the equivalent and permission of the instructor. (Academic year—day; summer 1965.)

**121-22 Spanish Literature of the Golden Age (3-3)**

Abrams

Lope de Vega, Calderón; the classic drama, the ballad, lyric poetry, prose. Class analysis of texts, collateral reading, lectures on literature and history. (1965-66 and alternate years: academic year—evening.)

**123-24 Cervantes: Don Quijote (3-3)**

McSpadden

Life and works of Cervantes: the *Quijote* and its relationship to other works of the Golden Age. Lectures, discussions, and reports. (1966-67 and alternate years.)

\* Spanish 3-4 or 6 is required, and Spanish 51-52 is recommended, as prerequisite to all second-group courses in Spanish.

- 125-26 **Modern Spanish Literature (3-3)** Mazzeo  
Prose and poetry of the 18th and 19th centuries. Class analysis of texts, collateral reading, lectures on literature and history. (1966-67 and alternate years.)
- 127-28 **Contemporary Spanish Literature (3-3)** Supervía  
Prose and poetry of the 20th century. Class analysis of texts, collateral reading, lectures on literature and history. (Academic year—day.)
- 129 **The Romantic Drama in Spain (3)** Mazzeo  
Class analysis of texts, collateral reading, and lectures on the Spanish Romantic Drama. (Summer 1966 and alternate summers.)
- 151-52 **The Spanish-American Novel (3-3)** Robb  
Development of the novel in Spanish America. Lectures, collateral reading, and class analysis of texts. (Academic year—evening.)
- 155-56 **Spanish-American Literature to 1880 (3-3)** Robb  
The literature of Spanish America from the colonial period to the latter part of the 19th century. Lectures, collateral reading, reports, and class analysis of important works. (1966-67 and every third year; summer 1965—Spanish 155 (3).)
- 157-58 **Spanish-American Literature since 1880 (3-3)** Robb  
The literature of Spanish America from 1880 to the contemporary period. Lectures, collateral reading, reports, and class analysis of important works. (1967-68 and every third year.)
- 197-98 **Proseminar: Readings for the Major in Spanish-American Literature (3-3)** Robb  
Required of all majors. Conferences and group discussions. (Academic year—as arranged.)
- 199-200 **Proseminar: Readings for the Major in Spanish Language and Literature (3-3)** Abrams, Mazzeo  
Required of all majors. Conferences and group discussions. (Academic year—as arranged.)

**Third  
Group**

- 202 **Explicación de textos (3)** Robb  
An analytical introduction to the study of Spanish and Spanish-American literature. The method will be demonstrated and practiced on selected passages. (Offered 1966-67.)
- 212 **Historical Spanish Grammar (3)** McSpadden  
Study of phonology, morphology, syntax, and lexicology of Old Spanish, including its development from Vulgar Latin. Practical exercises based on texts. Prerequisite: a second-group course in Spanish literature, Romance 279 *Introduction to Romance Philology and Linguistics* (see General Romance Courses), and an elementary knowledge of Latin. (Spring—day.)
- 214 **Old Spanish (3)** McSpadden  
Literature and language: *El poema de Mio Cid*, *El Conde Lucanor*, *El Libro de Buen Amor*, etc. Prerequisite: a second-group course in Spanish literature, Romance 279 *Introduction to Romance Philology and Linguistics* (see General Romance Courses), and an elementary knowledge of Latin. (Offered 1966-67.)
- 221 **Seminar: Works of Cervantes (3)** McSpadden  
Problems of composition, interpretation, criticism, literary history, and aesthetics. (Offered 1966-67.)
- 223 **Seminar: Drama of the Golden Age (3)** Abrams  
A study of the Spanish theater from its beginnings to Calderón. Reading



and analysis of representative works of Lope, Tirso, Alarcón, Calderón, and the pre-Lopistas. (Offered 1966-67.)

- 224 **Seminar: the Renaissance in Spain (3)** Abrams  
Historical and literary aspects of 16th-century Spain. Emphasis on important prose works, mysticism, and lyric poetry. (Offered 1966-67; summer 1965.)
- 226 **Seminar: the Novel in the Golden Age (3)** Abrams  
Various manifestations of the novel: chivalric, pastoral, Byzantine, with main emphasis on the picaresque. (Spring—day.)
- 231 **Seminar: Spanish Writers of the 18th Century (3)** Mazzeo  
Lectures and analysis of principal authors and works; relationships with subsequent literary movements. (Fall—day.)
- 242 **Seminar: Spanish Romanticism (3)** Mazzeo  
Lectures and analysis of principal authors and works. Collateral readings. Problems of origins and developments. (Spring—day.)
- 244 **Seminar: Naturalism and the Spanish Novel (3)** Mazzeo  
The development of Naturalism in 19th century Spain. Analysis of representative works of Pardo Bazán, Clarín, Blasco-Ibáñez, and others. (Offered 1966-67.)
- 245-46 **Seminar: Works of Galdós (3-3)** Supervía  
Ideological and stylistic analysis; relationship of his works to the literary movements of the second half of the 19th century. (Offered 1966-67.)
- 251 **Seminar: Works of Unamuno and Ortega y Gasset (3)** Supervía  
A study of their thought; analysis and commentary on the texts. (Fall—day.)
- 253 **Seminar: Modern and Contemporary Spanish-American Poets (3)** Robb  
Genesis and development of the Modernista Movement in Hispanic-America and Spain. Selected Post-Modernists. (Offered 1966-67.)
- 261 **Seminar: Spanish-American Essayists (3)** Robb  
The Spanish-American essay as an artistic form, studied in selected modern essayists such as Rodó, Ricardo Rojas, Vasconcelos, and Arciniegas. (Fall—day.)
- 264 **Seminar: Recent Trends in Spanish-American Fiction (3)** Robb  
Contemporary *cuentistas* and novelists: J. L. Borges, J. J. Arreola, A. Yáñez, C. Fuentes, E. Godoy, and A. Carpentier. (Offered 1966-67.)
- 266 **Seminar: Alfonso Reyes (3)** Robb  
Alfonso Reyes the essayist-artist, poet, and complete humanist as studied in his various prose and poetic works. (Spring—day.)
- 299-300 **Thesis (3-3)** The Staff  
(Academic year—as arranged; summer 1965—Spanish 299 (3).)

#### GENERAL COURSES IN ROMANCE LANGUAGES AND LITERATURES

- 270 **Experimental Phonetics (3)** McSpadden  
History; problems and methods of analysis in the physiological and acoustical branches of phonetics and intonation, their relationships, their applica-

tion to the Romance languages, and oral aspects of the Romance literatures. (Spring—day.)

**275-76 Comparative Romance Languages and Literatures III-IV (Portuguese) (3-3)** Robb

For candidates for the degree of Doctor of Philosophy. Lectures, discussions, exercises, and readings. (Offered 1966-67).

**277-78 Comparative Romance Languages and Literatures V-VI (Portuguese) (3-3)** Robb

For candidates for the degree of Doctor of Philosophy. Portuguese and Brazilian literatures from Camões to the 20th century. (Academic year—day.)

**279 Introduction to Romance Philology and Linguistics (3)** McSpadden

Study of principles found in the development of the Romance languages and methods of analysis at the present time. A general course for graduate students in the fields of the Romance languages and literatures. Prerequisite: an elementary knowledge of Latin. This course is normally followed by French 212 or Spanish 212. (Fall—day.)

**283 Problems of Teaching Romance Languages and Literatures in College (3)** McSpadden

For candidates for the degree of Doctor of Philosophy. Principles and problems of learning and teaching the language and literature. Apprenticeship in college classes and the language laboratory. (Not offered 1965-66.)

## Secretarial Studies\*

*Assistant Professor Margaret Kiley (Coordinator)*

*Assistant Professorial Lecturers Amil Jackowski, W. R. Throckmorton*

*Instructor Exa Tabor*

*Associate in Arts (two-year vocational curricula in Legal Secretarial Studies and Secretarial Studies).—See the College of General Studies Catalogue for complete details.*

*Associate in Science (two-year vocational curriculum in Medical Secretarial Studies).—See the College of General Studies Catalogue for complete details.*

*Associate in Secretarial Administration (two-year vocational curriculum).—See the College of General Studies Catalogue for complete details.*

*Bachelor of Arts in Education with a teaching field in Business Education.—Prerequisite: the Education curriculum, page 59.*

Required: the Business Education option and the professional courses listed on page 99.

**1 Elementary Typewriting (3)** Tabor, Throckmorton

Fundamental techniques of typewriting, basic styles of business letters, introduction to tabulation, and preparation of general office forms. Laboratory fee, \$7. (Fall and spring—day and evening.)

\* This program is administered by the College of General Studies. Credit for courses in Secretarial Studies cannot be applied toward degrees in Columbian College of Arts and Sciences or in the School of Government, Business, and International Affairs.  
Staff of Instruction for the academic year 1964-65.

- 2 Intermediate Typewriting (3)** Tabor, Throckmorton  
The business letter and its arrangement, advanced tabulation, manuscript typing, office forms, stencil cutting, and legal documents. Prerequisite: Secretarial Studies 1 or the equivalent; ability to type accurately at 30 words a minute. Laboratory fee, \$7. (Fall and spring—day and evening.)
- 10 Notehand (No academic credit)** Tabor  
A personal-use shorthand with integrated instruction in the processes and procedures for taking notes from listening and from reading. (Not offered 1965-66.)
- 11 Elementary Shorthand and Transcription (3)** Kiley, Throckmorton  
A study of the principles of Gregg shorthand correlated with dictation and transcription. Minimum shorthand speed of 60 words a minute attained. Laboratory fee, \$3. (Fall and spring—day and evening.)
- 12 Intermediate Shorthand and Transcription (3)** Kiley, Throckmorton  
Review of the principles of Gregg shorthand. Dictation and transcription on general and specialized business subjects. Minimum shorthand speed of 80 words a minute attained. Prerequisite: Secretarial Studies 11 or the equivalent; ability to take dictation at 60 words a minute. Laboratory fee, \$5. (Fall and spring—day and evening.)
- 13 Medical Shorthand, Typewriting, and Transcription (3)** The Staff  
Dictation and transcription of specially chosen material selected from case histories, medical correspondence, and hospital records. Experience in the use of dictation machines in transcription. Prerequisite: Secretarial Studies 12 or the equivalent; ability to take dictation at 80 words a minute. Laboratory fee, \$5. (Fall and spring—day and evening.)
- 15 Advanced Shorthand, Typewriting, and Transcription (3)** Kiley  
Dictation and transcription involving vocabularies in specific businesses. Minimum shorthand speed of 100 words a minute attained. Prerequisite: Secretarial Studies 12 or the equivalent; ability to take dictation at 80 words a minute. Laboratory fee, \$5. (Fall and spring—day and evening.)
- 16 Secretarial Shorthand, Typewriting, and Transcription (3)** The Staff  
Dictation and transcription involving vocabularies used in business, government, and the professions. Minimum shorthand speed of 120 words a minute attained. Prerequisite: Secretarial Studies 15 or the equivalent; ability to take dictation at 100 words a minute. Laboratory fee, \$5. (Spring—day and evening.)
- 17 Introduction to Legal Terminology and Law (3)** The Staff  
An introduction to American law, its sources and divisions; the setup of the courts; court procedures; law theory and practice. A study of vocabulary peculiar to the law. (Fall—day and evening.)
- 18 Legal Shorthand, Typewriting, and Transcription (3)** The Staff  
Dictation and transcription of material with a wide variety of legal vocabulary. Experience in preparation of legal documents and use of legal forms. Minimum shorthand speed of 120 words a minute attained. Prerequisite: Secretarial Studies 15 or the equivalent; ability to take dictation at 100 words a minute. Laboratory fee, \$5. (Spring—day and evening.)
- 19-20 Introduction to Medical Terminology and Medicine (3-3)** Mott \*  
A basic study of the complexity of the medical language is undertaken through analysis of the word elements. Diseases and injuries are explored with strong emphasis on terminology, symptomatology, and etiology. A study of medical facilities and their interrelationship is included. (Academic year—day and evening.)

\* Appointment effective September 1965.



22 **Medical Secretarial Internship (4)**

(To be arranged.)

51 **Correspondence and Communication (3)**

Tabor

Development of effective correspondence and communication through letter writing and business reports. Study of the influence of human relations on communication media. Analysis of current business literature. (Fall—day and evening.)

54 **Secretarial Practice (3)**

Tabor

A thorough study of secretarial responsibilities, problems, and procedures. Experience in the use of secretarial equipment, filing systems, and office management. The development of secretarial personality, office relationships, and professional ethics. (Spring—day and evening.)

## **Sino-Soviet Studies**

See "Institute for Sino-Soviet Studies"

## **Slavic and Oriental Languages and Literatures\***

*Associate Professor Helen Yakobson (Chairman)*

*Associate Professorial Lecturer J. C. Wang*

*Assistant Professors G. A. Olkhovsky, Nadine Popluiko, Victoria Sandor*

*Assistant Professorial Lecturers Kiril Jaszenko, M. I. Filipovitch-Nikatch, J. R. Child*

*Instructor A. A. Schultz*

*Bachelor of Arts with a major in Russian (Departmental).—Prerequisite: the Arts and Letters curriculum, page 57.*

Required: in addition to the general requirements, pages 63–67, Russian 91–92 or Slavic 93–94, Russian 161–62, and 179–80, and eighteen semester hours to be selected from second-group courses in Russian.

Russian majors are expected to have a reasonable proficiency in spoken and written Russian, a firm grasp of the fundamentals of Russian grammar, a general comprehension of Russian culture and history, and a general knowledge of Russian literature, as well as some first-hand acquaintance with writings of major Russian writers. Students who are already proficient in Russian may, upon passing an appropriate examination, waive any or all of the first-group language courses, as well as up to six hours of second-group language courses.

*Bachelor of Arts in Education with a major teaching field in Russian.—Prerequisite: the Education curriculum, page 59.*

Required: the Russian option and the professional courses listed on page 99.

*Master of Arts in the field of Linguistics.—See pages 258–59 and the departments of Germanic Languages and Literatures and Romance Languages and Literatures.*

## **CHINESE (MANDARIN)**

*First Group 1–2* **First-year Chinese (3–3)**

Wang

A year course: credit is not given for the first half until the second half is

\* Staff of Instruction for the academic year 1964–65

## **312 SLAVIC AND ORIENTAL LANGUAGES AND LITERATURES**

completed. For beginners. Pronunciation, conversation, reading, writing basic Chinese characters. Aural training, oral practice in electronic language workshop. Workshop fee, \$6 a semester. (Academic year—evening; summer 1965.)

**3-4 Second-year Chinese (3-3)**

Wang

A year course: credit is not given for the first half until the second half is completed. Continuation of grammar and spoken Chinese, more emphasis on the written language, reading, writing commonly used Chinese characters, reading selected writings. Aural training, oral practice in electronic language workshop. Workshop fee, \$6 a semester. Prerequisite: Chinese 1-2 or the equivalent. (Academic year—evening.)

**SLAVIC**

**1-2 First-year Russian (3-3)**

Yakobson and Staff *First Group*

A year course: credit is not given for the first half until the second half is completed. A beginners' course in fundamentals of grammar and pronunciation with graded reading, oral drill, and written practice. Listening comprehension and oral practice in electronic language workshop. Workshop fee, \$6 a semester. (First half: fall and spring—day and evening; summer 1965. Second half: fall and spring—day and evening; summer 1965.)

**3-4 Second-year Russian (3-3)**

Yakobson and Staff

A year course: credit is not given for the first half until the second half is completed. Systematic review of grammar. Study of special problems of Russian morphology and syntax. Oral and written reports on assigned topics. Workshop fee, \$6 a semester. Prerequisite: Russian 1-2 or two years of high school Russian. (First half: fall—day and evening; spring—evening. Second half: fall—evening; spring—day and evening.)

**5 First-year Russian (6)**

Olkhovsky

Classroom (5 hours), laboratory (2 hours). An accelerated beginners' course in fundamentals of grammar and pronunciation with graded reading, oral drill, and written practice. Listening comprehension and oral practice in electronic language workshop. Equivalent in coverage to Russian 1-2. Workshop fee, \$12. (Fall—day.)

**6 Second-year Russian (6)**

Olkhovsky

Classroom (5 hours), laboratory (2 hours). An accelerated course. Systematic review of grammar. Study of special problems of Russian morphology and syntax. Oral and written reports on assigned topics. Equivalent in coverage to Russian 3-4. Workshop fee, \$12. (Spring—day.)

**9-10 Russian Conversation and Composition (3-3)**

The Staff

Listening comprehension; oral and written practice. Prerequisite: Russian 3-4 or 6, or permission of the instructor. Workshop fee, \$6 a semester. (Academic year—day.)

**47 Beginning Russian for Reading Examination Candidates (0)**

The Staff

For graduate students with little or no knowledge of Russian who intend to use the language as a research tool. No academic credit. Tuition fee, \$138. (Fall—evening; summer 1965.)

**49 Russian Readings for Nonmajor Students (3)**

The Staff

Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students. Prerequisite: Russian 4, 6, or 47, or the equivalent. (Spring—evening; summer 1965.)

**91-92 Introduction to Russian Literature (3-3)**

Popluiko

A survey of Russian literature, in translation, from the earliest periods through the literary masterpieces of the 19th and early 20th centuries. Lecture, recitation, and discussion—in English. (Academic year—day.)

- 93-94 **Introduction to Slavic (non-Russian) Literature (3-3)** Filipovitch-Nikatch  
A survey of non-Russian Slavic literatures, in translation, from the early periods to the present, with emphasis on the contemporary scene. Lecture, recitation, and discussion—in English. (Academic year—evening.)
- Second Group*
- 101-2 **Readings in Modern Russian (3-3)** Yakobson and Staff  
Representative reading and translation of Soviet periodicals and selected texts in social sciences. Study of current political terminology, abbreviations, and Soviet idiom. (Academic year—day; summer 1965.)
- 103-4 **Scientific Russian (3-3)** The Staff  
Readings in the major fields of Russian contemporary scientific literature. (1966-67 and alternate years.)
- 109-10 **Advanced Russian Conversation and Composition (3-3)** The Staff  
Developing proficiency in oral and written expression. Prerequisite: Russian 10 or the equivalent. (Academic year—evening.)
- 125 **Russian Linguistic Structure (3)** Child  
Descriptive treatment of phonology, morphology, and syntax of contemporary Russian—in English. (Fall—evening.)
- 126 **Comparative Russian-English Linguistic Structure (3)** Child  
Contrastive treatment of Russian and English phonology, morphology, and syntax, with emphasis on pedagogical applications—in English. (Spring—evening.)
- 141-42 **Russian Literature of the 19th Century (3-3)** Popluiko  
Lectures, special reports, class analysis of selected works of 19th century Russian literature—in Russian. (1966-67 and alternate years.)
- 151-52 **Russian Literature of the 20th Century (3-3)** Popluiko  
Lectures, special reports, class analysis of selected works of 20th century Russian literature—in Russian. (1965-66 and alternate years: academic year—day.)
- 161-62 **Russian Culture (3-3)** Olkhovsky  
A survey of Russian cultural heritage from the origins of ancient Russia to the present—in English. Lecture, recitation, discussion, and individual reports on assigned topics. (Academic year—evening.)
- 165 **Soviet Literature (3)** Popluiko  
A survey of major literary figures, literary movements, and literary styles in translation. Revolution and its impact on literature and on writers. The revival of the psychological novel, short story; contemporary poetry—in English. (Fall—evening.)
- 179-80 **Advanced Russian for Undergraduate Majors (1-1)** Yakobson  
(Academic year—as arranged.)

## Sociology \*

*Professors* R. W. Stephens (*Acting Chairman*), I. H. Cisin  
*Professorial Lecturer* C. L. Perian  
*Associate Professors* R. G. Brown, Joseph Monane  
*Associate Professorial Lecturer* Cynthia Nathan

\* Staff of Instruction for the academic year 1964-65.



**Bachelor of Arts with a major in Sociology (Departmental).—Prerequisite:** the Arts and Letters curriculum, page 57, including Sociology 1-2, or the equivalent.

**Required:** in addition to the general requirements, pages 63-67, twenty-four semester hours in Sociology, which must include 141, and 149, and Statistics 53 or 104.

**American Thought and Civilization 101 American Civilization** is recommended as a senior-year elective for Sociology majors.

**Master of Arts in the field of Sociology.—Prerequisite:** the degree of Bachelor of Arts with a major in Sociology at this University or the equivalent.

**Required:** the general requirements, pages 69-71. All courses must be approved in advance by the adviser.

**1-2 Introductory Sociology \* (3-3)**  
(Formerly Sociology 2 and 41)

*First Group*

*First half:* development of culture and personality, the impact of groups and institutions on man's social behavior. A survey of the fields within sociology. *Second half:* analysis of major social problems confronting the United States. Factors producing social problems, their nature and treatment. (Academic year—day and evening; summer 1965—offered as Sociology 2 *Man, Culture, and Society II* (3) and Sociology 41 *American Social Problems* (3).)

**47 The Sociology of Work (3)**

Brown

Introductory survey of industrial sociology; the sociology of occupations and professions; industry-community relations; and the analysis of large, complex organizations. (1965-66 and alternate years: fall—day.)

**120 Aging in Modern Society (3)**

Nathan *Second Group*

Aging as a biological and sociological phenomenon; development of old age as a social problem with special emphasis on economic dependency and employment, the social role of the aged. (1966-67 and alternate years.)

**123 Fields of Social Work (3)**

Nathan

Introduction to the nature and scope of social work; the development of social work program, functions of social case work, social group work, and social action. (1965-66 and alternate years: fall—evening.)

**124 Medical Sociology (3)**

Brown

Sociological factors and processes which relate to physical and mental health and disease; analysis of patterned social relationships in the field of health and medicine; the hospital as a social system. (1965-66 and alternate years: spring—day.)

**125 Sociology of Religion (3)**

Yeide

Introduction to the history of the discipline, analysis of the reciprocal impact of secular upon religious and religious upon secular institutions, with special attention to the contemporary American situation. (1965-66 and alternate years: fall—day.)

**126 Urban Sociology (3)**

The place of the city in the larger society; growth of the city, problems of urban living, group life, personality, urban housing, and city planning. Includes consideration of suburban development. (1965-66 and alternate years: spring—day.)

**127 Population Problems (3)**

(Formerly Sociology 241)

Composition of populations, trends in population growth and population

\* Sociology 1-2 is prerequisite to all other courses in Sociology

pressure, factors producing population movements, effects of migration, population policies: eugenics and birth control. (1966-67 and alternate years; summer 1965.)

**129 Race and Minority Groups (3) Stephens**

Analysis of the relationships between dominant and minority groups in society, particularly in the United States; nature and range of problems; analysis of the phenomenon of prejudice. (1965-66 and alternate years: fall-day.)

**130 Social Stratification: Class and Status (3) Stephens**

(Formerly Anthropology 161)

Nature of class structure patterns of status, prestige relations in American society, differential class behavior, analysis of comparative social structure and social mobility. (1966-67 and alternate years.)

**131 Social Institutions (3)**

Functional analysis of basic social institutions: family, education, religion, economy, and state in the structure of American Society. (1966-67 and alternate years.)

**132 Courtship and Marriage (3)**

Dating and courtship as social processes, reasons for marriage, marriage laws, mate selection, factors in marital adjustment; prediction and counseling. (1965-66 and alternate years: spring-evening; summer 1965.)

**133 The Family (3)**

Stephens

Historical development of the family as a social institution, parent-child relations, family problems, disorganization and divorce, and family reorganization. (1966-67 and alternate years.)

**135 Juvenile Delinquency (3)**

Perian

Factors producing delinquency, juvenile detention, the juvenile court, training schools, treatment of offenders. (1965-66 and alternate years: fall-day; summer 1965.)

**136 Criminology (3)**

Perian

Nature and distribution of crime, police and court systems, prisons and reformatories; treatment and prevention of crime. (1965-66 and alternate years: spring-day; summer 1965.)

**138 Social Disorganization (3)**

Cisin

Analysis of factors contributing to disruption of social groups, institutions and communities; study of attempts to establish social controls in order to prevent, minimize, or mitigate the effects of socially disruptive conditions and events. (Not offered 1965-66.)

**141-42 Social Research Methods (3-3)**

Cisin

*First half:* introduction to the scientific method in the development of social theory and the solution to social problems. Research designs, including case studies, experiments, and surveys. *Second half:* continuation—concentrating on the translation of concepts into indices and the analysis and interpretation of research results, measurement, scales and scoring, hypothesis testing. (Academic year-day.)

**144 Mass Communications (3)**

Monane

The communications process; barriers to communication; structure and function of communication in society; content, control, support, and effects of mass communication. (1966-67 and alternate years.)

**147 Sociology of Large Organizations (3)**

Brown

Sociological analysis of the structural characteristics of large complex organizations, individual accommodations to such organizations, the impact of

the large organizational pattern on American social life. (1965-66 and alternate years: spring—evening; summer 1965.)

- 149 **Development of Social Theory (3)** Stephens  
Systematic study of the important schools of sociological theory, both European and American development, and evaluation of the scientific contributions of each school. (Spring—day.)
- 220 **Religious Institutions in the United States (3)** Yeide *Third Group*  
Advanced study of the structural variety of religious institutions and the patterns of interaction between religious and secular institutions in contemporary American life. (1965-66 and alternate years: spring—evening.)
- 221 **Seminar: Current Emphases in Sociology (3)**  
Analysis and evaluation of recent developments in sociology and an appraisal of the role of systematic theory in sociology. (Fall—day.)
- 223 **Migration and Assimilation (3)**  
Examination of the nature and scope of immigration, analysis of the adjustment of immigrants to a receiving society, the formation of ethnic and minority groups, the American experience. (Not offered 1965-66.)
- 228 **Criminal Behavior: Research and Theory (3)**  
A re-evaluation of theories of criminal and deviant behavior, based on recent research findings; implications for the correction and prevention of criminal behavior. (1966-67 and alternate years.)
- 231-32 **Seminar: Advanced Social Research Methods (3-3)** Cisin  
Intensive study and evaluation of current trends in the methodology of social research. Discussion focuses on individual student projects and recently published research. (1965-66 and alternate years: academic year—evening.)
- 233 **Theory Building and Applying (3)** Monane  
Critical examination of the elements of current theories in the social sciences with the major objective of developing general principles of theory construction, consideration of the functions of theory in sociological research. (Not offered 1965-66.)
- 240 **Sociology of Occupations and Professions (3)** Brown  
Analysis of occupational roles, occupational structures and changes within them, recruitment and training, adjustment problems at various stages of the career, relationships between stratification systems, life styles, and occupations. (1966-67 and alternate years.)
- 242 **Sociology of Health and Illness (3)** Brown  
A sociological analysis of social and cultural factors in the etiology and treatment of illness. Specifically covers social epidemiology, health and the community, the patient and treatment, and social and cultural theory in health and illness. (1965-66 and alternate years: fall—evening.)
- 243 **Seminar: Industrial Sociology (3)** Brown  
Analysis of problems of the organization of work in industry, government, business; problems of decision making, recruitment, allocation of authority, informal organization, and inter-organizational relations. (1965-66 and alternate years: spring—evening.)
- 295-96 **Research (arr.)** The Staff  
(Academic year—as arranged.)
- 299-300 **Thesis (3-3)** The Staff  
(Academic year—as arranged; summer 1965.)



## Spanish

See "Romance Languages and Literatures"

## Speech and Drama\*

*Professors* L. P. Leggette (*Chairman*), C. W. Pettit (*Director of Speech Clinic*), G. F. Henigan, Jr. (*Director of Forensics*), E. L. Stevens

*Professorial Lecturers* Zelda Fichandler, Edna Monsees, G. R. Herer, L. S. Bowling

*Associate Professors* Lee Bielski, Frances Henry

*Associate Professorial Lecturer* S. L. Berlinsky

*Assistant Professors* K. R. Sanders, R. A. Honeygosky

*Assistant Professorial Lecturers* A. A. Nilles, E. I. Shook, Ellie Chamberlain

*Instructor* A. N. Athanason

*Instructors (part-time)* Joan Regnell, Lois Richards, Ruth Cox, R. E. Roberts

*Bachelor of Arts with a major in Speech (Departmental).*—Prerequisite: the Arts and Letters curriculum, page 57, including Speech 1, 2, 11, 32.

Required: the general requirements, see pages 63–67, including the passing of a speech proficiency test early in the program; Speech 101, 121, 169, 176; and a minimum of twelve additional hours in second-group courses in the speech arts or speech science, as approved by the adviser.

American Thought and Civilization 101 *American Civilization* is recommended as a senior-year elective for Speech majors.

*Bachelor of Arts with a major in Dramatic Art (Departmental).*—Prerequisite: the Arts and Letters curriculum, page 57, including twelve hours in the basic courses in speech and six hours in English 51–52, 71–72, or 91–92.

Required: the general requirements, see pages 63–67, including the passing of a speech proficiency test early in the program. Speech 101 2, a minimum of nine additional hours in theater arts and nine hours in dramatic literature as approved by the adviser.

American Thought and Civilization 101 *American Civilization* is recommended as a senior year elective for Dramatic Art majors.

*Master of Arts in the field of Speech Rehabilitation*—Prerequisite: the degree of Bachelor of Arts with a major in Speech from this University, or the equivalent.

Required: the general requirements, pages 69–71.

*Master of Fine Arts in the field of Dramatic Art.*—Prerequisite: the degree of Bachelor of Arts from this University, or the equivalent.

Required: the general requirements, see pages 69–71, twelve to eighteen hours of second- and third-group courses in drama and dramatic literature offered on campus, and six to twelve hours in theater offered at the Arena Stage. For detailed information, consult the Chairman of the Department.

\* Staff of Instruction for the academic year 1964–65.

*Bachelor of Arts in Education with a teaching field in Speech and Drama.*—  
Prerequisite: the Education curriculum, page 59.

Required: the Speech and Drama option and the professional courses listed on page 99.

- A Speech Clinic** Pettit, Honeygosky *First Group*  
Individual or group lessons, without academic credit, for such speech difficulties as lisping, cleft palate, articulatory problems, and stuttering. Fee: for individual lesson, \$7; for group lesson, \$4. (Academic year—as arranged; summer 1965.)

- B-C American Speech for Foreign Students (3-3)** Bielski  
Class limited to foreign-born students. Instruction in the formation of the sounds of spoken English, with emphasis on rhythm and inflection. The International Phonetic Alphabet is used. Recording fee, \$5 a semester. (Academic year—day and evening; summer 1965.)

- 1 Effective Speaking (3)** The Staff  
Preparation and delivery of extempore speeches, developing confidence and poise, body and voice control, selecting and organizing material. Recording fee, \$2. (Fall and spring—day and evening; summer 1965.)

- 2 Persuasive Speaking (3)** Henigan, Sanders  
A continuation of Speech 1, which is prerequisite, with emphasis on speech composition and elementary principles of persuasion. (Fall—day; spring—day and evening.)

- 11 Voice and Diction (3)** Leggette and Staff  
Developing ease, naturalness, and clarity in the speaking voice. Analysis of individual voices through recordings. Phonetic approach to the study of the sounds of English, the standards of speech. Class instruction in the problems of rate, volume, pitch, and quality. Recording fee, \$4. (Fall and spring—day and evening; summer 1965.)

- 32 Oral Reading (3)** Leggette and Staff  
Reading to others, theory and practice in the problems of interpreting the printed page. Prerequisite: Speech 11. Recording fee, \$2. (Fall—day; spring—day and evening; summer 1965.)

- 101 Phonetics (3)** The Staff *Second Group*  
The International Phonetic Alphabet and its applications to the student's own speech improvement; also its application to such fields as theater, public speaking, speech correction, radio, television, and foreign languages. Prerequisite: Speech 11. Recording fee, \$4. (Fall and spring—day, summer 1965.)

- 102 Oral Interpretation of Literature (3)** Leggette  
Theory and practice in the problems of communicating meaning and emotion. Selections for study include poetry, prose, and drama. Prerequisite: Speech 32. Recording fee, \$2. (Spring—day.)

- 121 Group Discussion and Conference Leadership (3)** Stevens  
The process of thinking and problem solving in committees and small groups, and the methods of leading discussions and conferences. Prerequisite: 6 hours of speech or the permission of the instructor. (Fall—day; spring—evening; summer 1965.)

- 126 Public Discussion and Debate (3)** Henigan  
Principles and types of public discussion and debate; practice in argumentative speaking on questions of current interest. Prerequisite: 6 hours of speech or the permission of the instructor. (Spring—day.)

- 127-28 Advanced Debate Practice (1-1)** Henigan  
Admission by permission of the instructor, after one semester of satisfactory

participation in the intercollegiate debate program. This course may be repeated for a total of 4 semester hours. (Academic year—as arranged.)

- 133-34 Radio and TV Broadcasting (3-3)** **Shook**  
A study of the development of the radio and TV industries, station organization and management, equipment, production techniques; practice in the preparation and performance of radio programs. Recording fee, \$5 a semester. (Academic year—evening.)
- 135-36 Radio Workshop (1-1)** **The Staff**  
Practical work in campus radio station. (Academic year—as arranged.)
- 141 Public Speaking: Advanced Forms (3)** **Henigan**  
The preparation and presentation of speeches for formal occasions with emphasis on the psychology of the audience. Prerequisite: 6 semester hours of speech. (Fall—day.)
- 145 Speech Criticism (3)** **Henigan**  
A study of rhetorical theory with application to the criticism of representative American and British oratory. Admission by permission of the instructor. (Not offered 1965-66.)
- 153 Acting (3)** **Leggette**  
Study and practice in the fundamentals of acting technique. Prerequisite: Speech 32. Laboratory fee, \$5. (Fall—day.)
- 154 Play Direction (3)** **Athanson**  
Fundamentals of play direction. Under the supervision of the instructor, students prepare one-act plays for presentation. Laboratory fee, \$5. (Spring—day.)
- 155-56 Play Production Practice (1-1)** **The Staff**  
Practical work in theater. (Academic year—as arranged.)
- 166 History of the Theater (3)** **Nilles**  
A general survey of the rise of the theater: the Classical, Medieval, Renaissance, later English and Continental, and the Modern theater. (Not offered 1965-66.)
- 169 Creative Dramatics (3)** **Honeygosky**  
A study of creative dramatics and its use as a learning tool. (Fall—evening; summer 1965.)
- 170 Children's Theater (3)** **Leggette**  
Theory and practice in creating and producing plays for children. (Spring—evening.)
- 171 Introduction to Speech Disorders (3)** **Pettit**  
A survey of the disorders of speech, including symptomatology, testing, causation, and principles of therapy. (Fall—day.)
- 173-74 Speech Therapy (3-3)** **Honeygosky**  
Clinical techniques and procedures involved in the correction of the disorders of speech. Prerequisite: Speech 171 or concurrent registration and permission of the instructor. (Academic year—evening.)
- 176 Speech, Hearing, and Language Development (3)** **Henry**  
Study of normal speech from vegetative processes to articulation, normal development of auditory function and the emergence of language. (Spring—day.)
- 177-78 Clinical Practice in Speech Therapy (1-1)** **The Staff**  
Supervised case work in remedial speech—the University Speech Clinic, Children's Hospital, District of Columbia Crippled Children's Society, and



Public School system. Weekly meetings to discuss therapeutic techniques for the common speech problems. Prerequisite: Speech 101, 171, 173, and permission of the instructor. (Academic year—as arranged; summer 1965.)

- 182 **Hearing Problems and the Testing of Hearing** (3) The Staff  
A study of the field of audiology with emphasis on the testing of hearing. (Fall—evening.)
- 183-84 **Clinical Practice in Hearing Therapy** (1-1) The Staff  
Supervised case work with persons handicapped with hearing losses—the University Speech Clinic, the Washington Hearing Society, and Children's Hospital. Prerequisite: Speech 182 and permission of the instructor. (Academic year—as arranged; summer 1965.)
- 251 **Rehearsal and Performance** (2 to 4) Arena Stage Staff *Third Group*  
A course putting into practice the principles and techniques of acting through participation in lay rehearsals and performances at the Arena Stage. Admission by audition or interview. (Fall and spring—as arranged.)
- 254 **Directing Problems** (2 to 4) Arena Stage Staff  
Observation and participation in solving the problems involved in directing plays. Admission by interview. (Fall and spring—as arranged.)
- 255 **Techniques of Staging** (2 to 4) Arena Stage Staff  
Application of theory and principles of scene design, costuming, lighting, make-up, and related stage techniques. Admission by interview. (Fall and spring—as arranged.)
- 263 **Theater Management** (2 to 4) Arena Stage Staff  
Theory and practice in the psychology of handling the public: promotion, box office and house management. Admission by interview. (Fall and spring—as arranged.)
- 264 **Producing Problems** (2 to 4) Arena Stage Staff  
Problems involved in producing community and professional theater. Admission by interview. (Fall and spring—as arranged.)
- 277-78 **Advanced Clinical Practice in Speech Therapy** (1-1) The Staff  
(Academic year—as arranged.)
- 279 **Anatomy and Physiology of Speech and Hearing Disorders** (3) Henry  
Study of the structures and pathologies of speech and hearing. Laboratory fee, \$15. (Fall—day; summer 1965).
- 280 **Neurophysiology of Communication Problems** (3) Henry  
Study of peripheral and central nervous systems and their involvement in speech, hearing, and language problems. Laboratory fee, \$15. (Spring—day.)
- 283 **Advanced Audiology** (3) Bowling  
Advanced problems and testing techniques in audiology. Laboratory fee, \$7.50. (Spring—evening.)
- 284 **Dynamic Phonetics** (3) Henry  
Techniques and instrumentation for examining speech. Laboratory fee, \$7.50. (Fall—day.)
- 285 **Childhood Aphasia** (4) Monsees  
Designed to acquaint speech therapists and teachers of exceptional children with the McGinnis Association Method of rehabilitation: background lectures dealing with neurological, psychological, and psychiatric aspects of language disorders in children; current theories and practices in therapy.

Observation and clinical practice with classes of aphasic children at the Children's Hospital School for Aphasic Children. Prerequisite: undergraduate degree in speech and hearing, special education, or allied fields. (Not offered 1965-66.)

- 286 **Differential Diagnostics (3)** Pettit and Staff  
 Etiology for clinical observation; techniques in history taking, patient counseling, and management. Laboratory fee, \$5. (Spring—day.)
- 287-88 **Seminar: Communicology (3-3)** Pettit and Staff  
 Extensive study of specific problems in aphasia, cleft palate, mental retardation, stuttering, and other speech disorders. (Academic year—evening; summer 1965—Speech 287 (3).)
- 294 **Research in Dramatic Art (arr.)** The Staff  
 (Spring—as arranged.)
- 295-96 **Research in Speech and Hearing (arr.)** The Staff  
 (Academic year—as arranged; summer 1965—Speech 295 (3).)
- 299-300 **Thesis (3-3)** The Staff  
 (Academic year—as arranged; summer 1965—Speech 299 (3).)

#### RELATED COURSES IN OTHER DEPARTMENTS

Classical Languages and Literatures 71-72 *Greek and Roman Backgrounds in Literature (3-3)*  
 English 125 *Introduction to English Linguistics (3)*  
 English 135-36 *Shakespeare (3-3)*  
 English 175-76 *American Drama (3-3)*  
 English 183-84 *The English Drama (3-3)*  
 English 235-36 *Studies in Shakespeare and His Contemporaries (3-3)*  
 Education 134 *Student Teaching in Secondary Schools (6 to 9)*  
 Education 137 *Teaching Speech (2 to 4)*  
 Psychology 115 *Psychology of Language and Communication (3)*

#### COURSE OFFERED IN SPECIAL PROGRAM—SUMMER 1965

- 157 *Workshop in Producing Shakespeare (4)*

#### Statistics\*

*Professors* E. H. Johnson, H. F. Bright, Solomon Kullback (*Chairman*), Minoru Sakaguchi (*Visiting*)  
*Professorial Lecturers* Samuel Greenhouse, Seymour Geisser, Morton Kupperman, Rufus Isaacs  
*Associate Professors* Murray Brown, H. W. Lilliefors  
*Associate Professorial Lecturers* W. M. Wolman, Arthur Kirsch  
*Assistant Professor* R. E. Thomas  
*Assistant Professorial Lecturers* S. J. Armore, Selig Starr, R. H. Shumway  
*Instructor* J. K. Kern  
*Instructor (part-time)* Charles Anello

\* Staff of Instruction for the academic year 1964-65.

*Bachelor of Arts or Bachelor of Science with a minor in Mathematical Statistics (Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, page 57, including Mathematics 23 or former 30; Statistics 91.

Required: the general requirements, pages 63–67, including Mathematics 24; Statistics 117, 118, 155, 157–58, and nine additional hours of second-group Statistics courses selected with the approval of the adviser; a minimum of twenty-four semester hours of courses in other departments approved by the adviser as contributing to a well-organized program. For further details, consult the adviser.

*Master of Arts or Master of Science in the field of Mathematical Statistics.*—Prerequisite: a Bachelor of Arts or Bachelor of Science degree, respectively, with a major in Mathematical Statistics at this University, or the equivalent.

Required: the general requirements, pages 69–71, including a thesis in Statistics and at least twelve hours to be selected from approved third-group courses in Statistics. The remaining twelve hours must be selected in consultation with the adviser.

*Master of Arts in the field of Linguistics.*—See pages 258–59 and the departments of Germanic Languages and Literatures and Romance Languages and Literatures.

*Doctor of Philosophy.*—See pages 75–84.

*Bachelor of Business Administration or Master of Arts in Government with a major in Business and Economic Statistics.*—See pages 113–15, 121; 125–26, 131–32, 134.

- 51 **Introduction to Business and Economic Statistics (3)** The Staff *First Group* \*  
Lecture (2 hours), laboratory (2 hours). Survey of elementary principles and procedures for presenting, analyzing, and interpreting statistical data; consideration of characteristic values; measures of variability, sampling processes, index numbers, time series analysis, and simple correlation. Prerequisite: one entrance unit in algebra. Laboratory fee, \$9. (Fall and spring—day and evening; summer 1965.)
- 52 **Mathematics of Finance (3)** The Staff  
Lecture (3 hours). Interest and discount, annuities, valuation of stocks and bonds, sinking funds, amortization, valuation of depletable assets, depreciation. Prerequisite: one entrance unit in algebra. (Fall and spring—day.)
- 53 **Introduction to Statistics in Psychology and Education (3)** The Staff  
Lecture (2 hours), laboratory (2 hours). Sources of data, tabulation, charts and graphs, averages, dispersion, quartiles and percentiles, raw scores and derived scores, frequency distributions, reliability and validity of tests, normal curve, correlation, elementary sampling, and an introduction to estimation and tests of hypotheses. Prerequisite: one entrance unit in algebra. Laboratory fee, \$9. (Fall and spring—day and evening; summer 1965.)
- 91 **Principles of Statistical Methods † (3)** The Staff  
Lecture (2 hours), laboratory (2 hours). Variates and attributes, averages and dispersion, frequency distributions and their characteristics, regression and correlation, statistical decision processes. Prerequisite: one entrance unit in algebra. Laboratory fee, \$9. (Fall—evening; spring—day; summer 1965.)
- 104 **Statistics in Psychology and Education (3)** The Staff *Second Group*  
Lecture (2 hours), laboratory (2 hours). Introductory study of statistical techniques necessary for application of statistics in research problems in

\* Of first-group courses, Statistics 51, 53, and 91 are related in their subject matter, and credit hours for only one of the three may be applied toward a degree. Statistics 52 lies outside of this group, and may be taken for degree credit in combination with any one of the other three.

† Statistics 91 is for Statistics majors, for students in engineering and in the biological and physical sciences.



psychology and education. Laboratory fee, \$9. (Fall—Saturday morning; summer 1965.)

- 105 **Statistics in Psychology and Education (3)** The Staff  
Lecture (2 hours), laboratory (2 hours). Advanced study of statistical techniques necessary for an application of statistics in research problems. Analysis of variance, correlation techniques, chi-square applications, and sampling theory. Prerequisite: Statistics 53 or 104. Laboratory fee, \$9. (Spring—Saturday morning.)
- 106 **Factor Analysis (3)** Kirsch  
Matrix theory as applied to factor analysis, introduction to the concepts of factor analysis and their utility in various phases of research. Prerequisite: Statistics 105 or the equivalent. Laboratory fee, \$20. (1965–66 and alternate years: fall—evening.)
- 107 **Statistics for Engineers (3)** The Staff  
Simple probability models, discrete and continuous distributions, sampling, hypothesis testing and estimation, nonparametric tests. Emphasis on engineering applications. Prerequisite: differential and integral calculus. (Fall and spring—evening; summer 1965.)
- 110 **Quality Control Techniques (3)** The Staff  
Applications of probability and distribution theory to industrial control problems; use of quality and control charts; acceptance sampling plans; estimation of lot and process characteristics. Prerequisite: Statistics 51 or permission of instructor. (1966–67 and alternate years.)
- 111 **Business and Economic Statistics I (3)** Johnson  
Statistical processes as related to the problems of business and economic research with emphasis on decision making under conditions of uncertainty. Topics include averages, dispersion, analysis of variance, correlation, quality control, and index numbers. Prerequisite: Statistics 51 or permission of instructor. (Fall—day and evening.)
- 112 **Business and Economic Statistics II (3)** Johnson  
Specific problems of business and economics with statistics as a tool of analysis. Introduction to principles and use of linear programming, game theory and queueing theory techniques. Study of various economic relationships, including demand, supply, cost and price functions. Prerequisite: Statistics 111 or equivalent. (Spring—day and evening.)
- 117 **Analysis of Variance I (3)** The Staff  
Lecture (2 hours), laboratory (2 hours). The analysis of variance to segregate factors producing significant variation; a method to estimate experimental error, multiple classifications, Latin Square, Greco-Latin Square, factorials; an introduction to model theory. Prerequisite: Statistics 91. Laboratory fee, \$9. (Fall—evening; spring—day; summer 1965.)
- 118 **Correlation and the Chi-square Test I (3)** The Staff  
Lecture (2 hours), laboratory (2 hours). Regression and correlation theory: simple, partial, and multiple; nonparametric methods; analysis of covariance; contingency table analysis; tests of goodness of fit. Prerequisite: Statistics 91. Laboratory fee, \$9. (Fall—day; spring—evening.)
- 122 **Forecasting Principles and Techniques (3)** Johnson  
Survey and appraisal of techniques for measuring the state of business conditions and an examination of current indicators. Study of procedures for estimating future values: budget requirements, price levels, or level of general business activity. Prerequisite: Statistics 51 or the equivalent. (Spring—day.)
- 123 **Introduction to Econometrics (3)** Johnson  
A basic quantitative approach to fundamental problems in economic theory involving the use of statistical processes, simple model construction, and

probability considerations. Prerequisite: elementary course in Economics and Statistics. (Fall—day.)

- 155 **Introduction to Mathematical Probability (3)** The Staff  
Probability distributions, Bayes' theorem and postulate, Bernoulli's theorem and its experimental verification, mathematical expectation, laws of large numbers. Prerequisite: permission of instructor. (Fall—day; spring—evening.)
- 157-58 **Mathematical Statistics (3-3)** The Staff  
Distribution theory, sampling theory, estimation, hypothesis testing, confidence methods, regression analysis, experimental design. Prerequisite: differential and integral calculus. (Academic year—day and evening.)
- 187 **Theory of Sampling (3)** Lilliefors  
Problems of sampling and sample design. Admission by permission of the instructor. (1965-66 and alternate years: fall—evening.)
- 188 **Nonparametric Statistical Inference (3)** Lilliefors  
Statistical inference when the form of the underlying distribution is unknown, sign tests, rank order statistics, theory of runs, nonparametric discriminant analysis. (1965-66 and alternate years: spring—evening.)
- 189-90 **Mathematical Probability and Applications (3-3)** Starr  
Combinatorial analysis, conditional probability and stochastic independence, probability distributions, laws of large numbers, recurrent events, random walks, Markov chains, simple time-dependent stochastic processes. Prerequisite: Statistics 155 or permission of instructor. (Academic year—evening.)
- 193 **Statistical Mathematics \* (3)**  
Problems in statistics with the development of real variable theory necessary for their solution. Prerequisite: differential and integral calculus. (Not offered 1965-66.)
- 194 **Statistical Mathematics \* (3)**  
Problems in statistics with the development of complex variable theory necessary for their solution. Prerequisite: differential and integral calculus. (Not offered 1965-66.) Statistics 194 is the same as Mathematics 157 which will be offered fall—evening.
- 195-96 **Reading and Research in Statistics (arr.)** The Staff  
(Academic year—as arranged.)
- 197 **Digital Computer Programming with Applications (3)** Thomas  
Lecture (2 hours), laboratory (2 hours). The use of the digital computer in statistical and other computational work. Machine language, SPS and FORTRAN programming. Writing, debugging, and running programs on the digital computer, using the IBM 1620 in the University Computing Center. Prerequisite: permission of the instructor. Laboratory fee, \$20. (Fall and spring—day; summer 1965.)
- 207-8 **Operations Analysis (3-3)** Lilliefors *Third Group \**  
Basic concepts and techniques of operations analysis as applied to problems in business management and economic research. An introduction to the processes of linear programming, game theory, and queueing theory. (Academic year—evening.)
- 217-18 **Experimental Design (3-3)** Wolman  
Advanced theory of the applications of the linear and other hypotheses to experimental design. (1965-66 and alternate years: academic year—evening.)

\* Prerequisite to all third-group courses: Mathematics 124 and Statistics 193 and 194, or the equivalent, and permission of the instructor



- 257 **Advanced Mathematical Statistics I (6)** Kupperman  
Distribution functions, sequences of random variables, characteristic functions, sampling theory, linear statistical estimation. (Fall—evening.)
- 258 **Advanced Mathematical Statistics II (6)** Kupperman  
Statistical estimation, tests of hypotheses, sequential analysis, statistical decision functions, time series, multivariate statistical theory. (Spring—evening.)
- 259-60 **Advanced Mathematical Probability (3-3)** Kullback  
Measure theory, probability spaces, random variables, probability distributions, sequences of random variables, conditioning, Martingales. (1965-66 and alternate years: academic year—day.)
- 261-62 **Information Theory for Engineers (3-3)** Kullback  
The elements of information theory and its statistical and probabilistic background from an elementary point of view (nonmeasure-theoretic). Measures of information, entropy, and their properties. Discrete stochastic sources, message ensembles. The transmission of information, channels, channel capacity. Encoding and decoding including error detection and correction. The fundamental theorems of information theory. (1966-67 and alternate years.)
- 263-64 **Topics in Statistical Inference (3-3)** Greenhouse  
Estimation; methods in point estimation—moments, least squares, maximum likelihood, etc; confidence and fiducial intervals; testing of statistical hypotheses; tests of significance; likelihood ratio; nonparametric and distribution free methods; likelihood—odds and the odds ratio; Bayesian inference—the use of prior knowledge, ignorance and diffuse prior distributions, point and interval estimation in the posterior distribution; selected topics in decision theory and information theory. (Academic year—evening.)
- 265-66 **Multivariate Analysis (3-3)** Geisser  
A year course: credit is not given for the first half until the second half is completed. Tests of significance, generalized variance and covariance, tests of independence, canonical and vector correlations, multivariate, normal distribution, generalized Student's ratio, problems of estimation, applications to factor analysis. (Academic year—evening.)
- 267-68 **Characteristic Functions (3-3)** The Staff  
A year course: credit is not given for the first half until the second half is completed. Fourier integrals, set functions, inversion formulas, limit theorems, applications to the distribution problem in statistics. (1966-67 and alternate years.)
- 269 **Sequential Testing (3)** The Staff  
(1967-68 and every third year.)
- 270 **Statistical Decision Theory (3)** The Staff  
(1967-68 and every third year.)
- 271-72 **Statistical Information Theory (3-3)** Kullback  
A year course: credit is not given for the first half until the second half is completed. Basic concepts, definitions, and formulas of information theory: their significance and general properties. Shannon's coding theorem, channel capacity, and transmission of information, inequalities of information theory and sufficiency; applications to statistical problems of discrimination and hypothesis testing. Asymptotic distribution theory of information; analysis of contingency tables; loss of information due to grouping and sequential analysis; comparison of experiments. (1966-67 and alternate years.)
- 273-74 **Stochastic Processes (3-3)** Kullback  
A year course: credit is not given for the first half until the second half is



completed. Fundamental notions of stochastic processes; random walks; Markov processes; differential processes; Gaussian processes; applications. (1966-67 and alternate years.)

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|---------|--|-----------|
| 275     | <b>Econometrics I: Introduction to Econometric Studies *</b> (3)   | Brown     |
|         | Survey of econometrics. (Fall—evening.)  |           |
| 276     | <b>Econometrics II: Econometric Methods *</b> (3)  | Brown     |
|         | Development of the methods of econometrics. Prerequisite: differential and integral calculus, matrix theory, and Statistics 275. (Spring—evening.) |           |
| 277     | <b>Econometrics III: Advanced Topics in Econometrics *</b> (3)   | Brown     |
|         | The analysis of econometric techniques. Prerequisite: Statistics 275 and mathematical economics. (Spring—evening.)                                 |           |
| 278     | <b>Econometrics IV: Seminar in Econometrics *</b> (3)  | Brown     |
|         | A research seminar. Prerequisite: Statistics 275, 276, 277. (Fall—evening.)  |           |
| 279-280 | <b>Differential Games</b> (3-3)  | Isaacs    |
|         | (Academic year—evening.)   |           |
| 295-96  | <b>Reading and Research</b> (3-3)  | The Staff |
|         | (Academic year—as arranged.)   |           |
| 297     | <b>Seminar: Problems in Mathematical Statistics</b> (3)  | Kullback  |
|         | (Summer 1965.)   |           |
| 299-300 | <b>Thesis</b> (3-3)  | The Staff |
|         | (Academic year—as arranged.)   |           |

#### **COURSES OFFERED IN SPECIAL PROGRAMS**

In addition to the regular courses announced above the University offers the following courses for students enrolled in the following special programs: Navy Graduate Financial Management Program, Air Force Advanced Management Program, Engineering Administration, and Health Care Administration.

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|-------|---|
| 101-2 | <b>Basic Principles of Statistical Methods</b> (3-3)  |
|       | Variables and attributes, averages and dispersion, elementary principles of sampling, introduction to the making of statistical decisions.  |
| 119   | <b>The Bases of Statistical Decision Making</b> (arr.)  |
|       | Introduction to the techniques of decision making, with emphasis on applications rather than theory. Includes: binomial distribution, normal distribution, Type I and II errors, estimation, research methodology, and problems of inference. (Summer 1965.)                |
| 120   | <b>Principles of Statistical Analysis</b> (3)   |
|       | Introduction to the basic concepts of statistical analysis, measures of central tendency, dispersion, normal distribution, basic statistical inference including estimation and testing hypotheses. (Summer 1965.)  |
| 250   | <b>Managerial Statistics and Quality Control</b> (3)  |
|       | The application of statistical principles and practices to management and quality control. Emphasis is placed on the use of statistical techniques in making management decisions, controlling quality and standardization. Prerequisite: Statistics 107 or the equivalent. |

## **Zoology**

See "Biological Sciences"

\* An interdepartmental course offered by the departments of Economics and Statistics. Students may register in either department.

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\* Nominated by the alumni.

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 Charles Stanley White, M.D., Sc.D.  
 Lloyd Bennett Wilson

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\* The President of the University, the Dean of Faculties, the Registrar of the University and the Director of Admissions of the University are ex officio members of all faculties of the colleges, schools, and divisions of the University

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 Archibald Mulford Woodruff, Ph.D., Until February 1, 1965—*Dean of the School of Government, Business, and International Affairs*  
 Harold Frederick Bright, Ph.D., Beginning February 1, 1965—*Acting Dean of the School of Government, Business, and International Affairs*  
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 William Lewis Turner, Ph.D., *Assistant Dean in Columbian College of Arts and Sciences*  
 William Wallace Kirkpatrick, A.B., LL.B., *Assistant Dean of the Law School*  
 Edward Andrew Potts, A.B., LL.B., *Assistant Dean of the Law School*  
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 Herbert Ernest Smith, Ph.D., *Assistant Dean (Academic) of the School of Engineering and Applied Science*  
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 Blake Smith Root, A.M., Ed.D., *Assistant Dean of the School of Education*  
 James Carlton Dockeray, Ph.D., *Assistant Dean (Programs in Government and Business) of the School of Government, Business, and International Affairs*  
 Hiram Miller Stout, Ph.D., *Assistant Dean (Programs in International Affairs) of the School of Government, Business, and International Affairs*  
 Lowell Winfield Williams, B.S. in Eng., M.S. in P.A., *Assistant Dean of the School of Government, Business, and International Affairs*  
 James Grady Brown, A.M., Ed.D., *Assistant Dean (Administration) of the College of General Studies*  
 Robert Whittington Eller, B.S., Ed.D., *Assistant Dean (Special Projects) of the College of General Studies*  
 Richard Baker Simons, Ph.D., *Assistant Dean (Academic Affairs) of the College of General Studies*  
 Elizabeth Truman Wright, A.M., *Assistant Dean of the Division of University Students*  
 Nelson Mead Head, B.S., *Assistant Dean for Sponsored Research*  
 Isabella Frances Young, A.B. in L.S., *Librarian of the Medical Library*  
 Hugh Yancey Bernard, A.B., B.S. in L.S., J.D., *Librarian of the Law Library*

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The deans of the degree-granting schools and colleges of the University and the Associate Dean of Faculties are members of the Committee on Academic Policy, whose chairman is the President of the University and whose vice-chairman is the Vice President and Dean of Faculties. The Dean for Sponsored Research, the Administrator of the National Law Center, and the Dean of the Division of University Students serve as ex officio members. The President on occasion may invite members of the Board of Trustees, representatives of Faculty Senate committees, and the President of the General Alumni Association to attend Committee meetings.

### COMMITTEE ON ADMINISTRATIVE POLICY

The Committee on Administrative Policy, whose chairman is the President of the University and whose vice-chairman is the Vice President and Treasurer, is composed of the following members: the



Vice President and Treasurer, the Dean for Sponsored Research, the Administrator of the University Hospital, the Assistant Vice President—Resources, the Comptroller, the Director of Admissions, the Registrar, the Executive Assistant to the President, the Business Manager, the Director of Personnel Services, the Assistant Treasurer and Director of the Office of Student Financial Aid, and the other Assistant Treasurer(s). The Vice President and Dean of Faculties serves as an ex officio member. The President on occasion may invite members of the Board of Trustees, representatives of the Faculty Senate committees, and the President of the General Alumni Association to attend Committee meetings.

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David Crittendon Green	Robert Corbin Vincent

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#### Committees on Student Affairs

#### COMMITTEE ON STUDENT LIFE

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Virginia Randolph Kirkbride	Elizabeth Truman Wright
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\*Harold Frederick Bright  
(beginning February 1, 1965)  
\*John Anthony Brown, Jr.  
\*Arthur Edward Burns  
\*Oswald Symister Colclough  
(*Chairman*)  
Mary Ellen Coleman  
†Paul Arthur Crafton  
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Roy Brandon Eastin  
John Lincoln Finan  
Raymond Richard Fox  
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Robert Heller  
Herman Hedberg Hobbs  
\*Frederick Russell Houser  
\*Robert Kramer  
Wolfgang Herbert Kraus  
(*Chairman of the Executive  
Committee*)

Hugh Linus LeBlanc  
Gust Angelo Ledakis  
\*Calvin Darlington Linton  
Harold George Mandel  
\*Martin Alexander Mason  
Howard Maxwell Merriman  
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Charles Rudolph Naeser  
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\*John Parks  
John Palmer Reesing, Jr.  
Carol Ruth St. Cyr  
David Earl Seidelson  
David James Sharpe  
Edwin Lockwood Stevens  
Charles Samuel Wise  
Reuben Esselstyn Wood  
\*Archibald Mulford Woodruff  
(until February 1, 1965)  
Helen Bates Yakobson

\* Ex officio members.

† Sabbatical fall semester, John Kaye pro tempore.



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**The Graduate Council**  
**The School of Education**  
**The School of Government, Business,  
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Richard Norman Owens, Ph.D., C.P.A., *Professor Emeritus of Business Administration*

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\* Faculty and Staff of Instruction for the academic year 1964-65. For the Faculty and Staff of Instruction in Engineering and Applied Science, Law, and Medicine, request the appropriate catalogue (see "Annual Issues of the University Bulletin," page 360).



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\* The University Faculty is composed of the President of the University, the Dean of Faculties, the Director of Admissions, the Registrar, the Librarian, the Treasurer, the Director of Health Services, the Administrator of the Hospital, and the membership of the several school and college faculties.

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 John Charles Bartone, Ph.D., *Assistant Professor of Anatomy*  
 Katharine Pease Beardsley, Ph.D., *Associate Clinical Professor of Psychology*  
 Norman Beckman, Ph.D., *Associate Professorial Lecturer in Public Administration*  
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 John Withrow Brewer, Ph.D., *Professor of International Law*  
 Harold Frederick Bright, Ph.D., *Professor of Statistics; Associate Dean of Faculties; Acting Dean of the School of Government, Business, and International Affairs (beginning February 1, 1965)*  
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 Robert Guy Brown, Ph.D., *Associate Professor of Sociology*  
 Stephen Jeffry Brown, Ph.D., *Associate Professor of English Literature*

\* On sabbatical leave 1964-65.

- William Walter Brownholtz, A.B., C.P.A., *Associate Professorial Lecturer in Accounting*
- John Robert Buchheit, M.S., *Associate Professorial Lecturer in Zoology*
- James Leonard Buckler, A.M. in Govt., *Professorial Lecturer in Accounting*
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- †William Graham Clubb, Ph.D., *Professor of French*
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- Charles William Cole, Ph.D., *Professor of American Literature*
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- Leonard Cornelius Collins, A.B., LL.M., *Professorial Lecturer in Business Administration*
- Robert Rudolph Columbus, Ph.D., *Assistant Professor of English Literature*

\* On leave of absence 1964-65.

† On sabbatical leave spring semester 1964-65.



William John Condell, Jr., Ph.D., *Associate Professorial Lecturer in Physics*  
 George Frederick Conner, M.B.A., *Assistant Professor of Business Administration*  
 Donald Maurice Cook, M.H.A., *Assistant Professor of Health Care Administration*  
 Anne Cordero, A.M., *Instructor in French*  
 Bertice Cornish, Ed.D., *Professorial Lecturer in Education*  
 John Walker Coughlan, Ph.D., C.P.A., *Associate Professor of Accounting; Coordinator of Programs in Accounting*  
 Louis Court, Ph.D., *Visiting Associate Professor of Mathematics*  
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 James Edward Daly, Jr., Ed.B., *Assistant Professorial Lecturer in Business Administration*  
 Dwight David Darland, A.M., Ed.D., *Professorial Lecturer in Education*  
 John Tait Davis, Ph.D., *Associate Professor of Geography*  
 \*William Columbus Davis, Ph.D., *Professor of Latin American History*  
 Clarke Davison, Ph.D., *Professor of Pharmacology*  
 †Roderick Hollett Davison, Ph.D., *Professor of European History*  
 Vincent James DeAngelis, B.S. in P.E., A.M. in Ed., *Professor of Physical Education for Men*  
 Ronald Arthur Dearden, B.S. in P.E., A.M. in Ed., *Assistant Professor of Physical Education for Men*  
 Clyde Dease, M.S., *Instructor in Physics*  
 Frank Landt Dennis, A.B., LL.B., *Assistant Professorial Lecturer in Journalism*  
 Alton Harold Desmond, Ph.D., *Professor of Zoology*  
 Harry Grubb Detwiler, Ed.D., *Associate Professor of Education*  
 Michael Morgan Dietch, Jr., M.B.A., *Instructor (part-time) in Business Administration*  
 Oscar Charles Disler, A.M. in Govt., *Associate Professorial Lecturer in Accounting*  
 James Carlton Dockeray, Ph.D., *Professor of Finance; Assistant Dean (Programs in Government and Business) of the School of Government, Business, and International Affairs; Coordinator of Programs, Industrial College of the Armed Forces*  
 Andrea Doman, Ph.D., *Assistant Clinical Professor of Psychology*  
 Jesse Frank Doubleday, A.M., *Associate Professorial Lecturer in Business Administration*  
 Daniel Maccabaeus Dribin, Ph.D., *Professorial Lecturer in Mathematics*  
 Barbara Dunham, A.M., *Instructor in English Composition*  
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 John Thomas Dutro, Jr., Ph.D., *Associate Professorial Lecturer in Geology*  
 Dolan Eargle, Jr., Mus.B., Ph.D., *Assistant Professor of Chemistry*  
 Roy Brandon Eastin, Ph.D., *Professor of Business Administration*

\* On leave of absence 1964-65.

† On sabbatical leave 1964-65.

Roy Edelfelt, A.M., Ed.D., *Professorial Lecturer in Education*  
 Daniel James Edwards, Ph.D., *Associate Professorial Lecturer in Economics*  
 Vernon David Elder, A.B., *Instructor (part-time) in Physical Education for Men*  
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 Jean Ervin, Ph.D., *Professorial Lecturer in Education*  
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 Grace Elizabeth Orvis Evans, A.M., *Professorial Lecturer in Art*  
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 Richard Foster, M.H.A., *Assistant Professorial Lecturer in Health Care Administration*  
 Maurice Hamilton Fouracre, Ph.D., *Professorial Lecturer in Education*  
 John Andrew Frey, Ph.D., *Associate Professor of Romance Languages*  
 Charles Edward Galbreath, Ph.D., *Professor of International Economics; Coordinator, Programs for the War Colleges; Coordinator, National War College Center and War College Program at the Pentagon*  
 Michael Graham Gallagher, A.B. in Govt., LL.B., *Assistant Professor of Accounting*  
 Patrick Francis Gallagher, Ph.D., *Assistant Professor of Sociology and Anthropology*  
 Robert Norton Ganz, Ph.D., *Associate Professor of American Literature*  
 Raymond Leonard Garthoff, Ph.D., *Professorial Lecturer in International Affairs, Institute for Sino-Soviet Studies*  
 Alexander Ramsey Gassaway, A.M., *Assistant Professor of Geography*  
 Michael Gasster, Ph.D., *Assistant Professor of History*  
 Henry Irving Gates, M.F.A., *Instructor in Art*  
 James David Gates, A.M., *Assistant Professorial Lecturer in Education*  
 Aladino Gavazzi, M.S., *Assistant Professorial Lecturer in Health Care Administration*  
 Seymour Geisser, Ph.D., *Professorial Lecturer in Statistics*  
 Paul Gekker, A.M. in Govt., *Assistant Professorial Lecturer in Economics*  
 Lyndale Harpster George, B.S. in P.E., A.M. in Ed., A.P.C., *Associate Professor of Physical Education for Women*  
 Sylvia Wigdor Gerber, A.M., *Associate Professorial Lecturer in Latin*  
 Lila Ghent, Ph.D., *Assistant Research Professor of Psychology*  
 Frederick Harrell Gibbs, M.H.A., *Professor of Hospital Administration; Coordinator, Programs in Health Care Administration*  
 Leon Gintzig, Ph.D., *Professor of Hospital Administration; Assistant Coordinator, Programs in Health Care Administration*  
 Michael Albert Gomez, Ph.D., *Associate Professorial Lecturer in Economics*

Cecil Earnest Goode, M.S., *Professorial Lecturer in Public Administration*  
 Bernard Gordon, Ph.D., *Visiting Research Professor of Political Science*  
 Daniel Gottlieb, A.M., *Associate Professorial Lecturer in Journalism*  
 Wood Gray, Ph.D., *Professor of American History*  
 Samuel Greenhouse, Ph.D., *Professorial Lecturer in Statistics*  
 John Robert Greenya, A.B., *Instructor in English Composition*  
 Angus MacIvor Griffin, Ph.D., *Professor of Microbiology*  
 Fuller Griffith, B.S., *Assistant Professorial Lecturer in Art*  
 William Byron Griffith, Ph.D., *Assistant Professor of Philosophy*  
 William Foster Grossnickle, A.M., *Instructor (part-time) in Psychology*  
 Phillip Donald Grub, D.B.A., *Assistant Professor of Business Administration*  
 Dezider Gruenberger, Ph.D., *Visiting Assistant Research Professor of Pharmacology*  
 Sheldon Edward Haber, Ph.D., *Assistant Professorial Lecturer in Economics*  
 Fred Latimer Hadsel, Ph.D., *Professorial Lecturer in Political Science*  
 Francis Newell Hamblin, A.B., Ed.D., *Professor of Education; Dean of the School of Education*  
 Pyo Wook Han, Ph.D., *Professorial Lecturer in International Affairs, Institute for Sino-Soviet Studies*  
 Raymond George Hanken, B.S. in P.E., A.M. in Ed., *Professor of Physical Education for Men*  
 Ira Bowers Hansen, Ph.D., *Professor of Zoology*  
 Teruo Hara, A.M., *Studio Lecturer in Art (Ceramics)*  
 John May Harrison, M.S., *Assistant Professor of Physics*  
 Quentin LeRoy Hartwig, Ph.D., *Assistant Professor of Physiology*  
 Richard Catlin Haskett, Ph.D., *Professor of American History*  
 John Christopher Haskins, Mus.B., A.M., *Assistant Professorial Lecturer in Music*  
 George Francis Henigan, Jr., Ph.M., *Professor of Speech; Director of Forensics*  
 David Robert Henriquez, Capt., USAF, B.S. in B.A., *Assistant Professor of Aerospace Studies*  
 Francis Vlerebome Henry, Mus.M., Ph.D., *Associate Professor of Speech*  
 Charles Joseph Herber, A.M., *Assistant Professor of European History*  
 Gilbert Herer, Ph.D., *Professorial Lecturer in Speech*  
 Julia Hicks, A.M., *Instructor in Romance Languages*  
 Frank Higginbotham, M.S., C.P.A., *Professorial Lecturer in Accounting*  
 Philip Henry Highfill, Jr., Ph.D., *Professor of English Literature*  
 \*Charles Wadsworth Hill, Ph.D., *Associate Professor of Psychology*  
 Peter Proal Hill, A.M., *Assistant Professor of History*  
 John Vincent Hinkel, M.S., *Assistant Professorial Lecturer in Journalism*  
 Harold Clendenin Hinton, Ph.D., *Associate Professor of International Affairs*  
 Herman Hedberg Hobbs, Ph.D., *Professor of Physics*  
 Joseph Frederick Hoffman, Ph.D., *Assistant Professorial Lecturer in Physiology*  
 John Holden, Ph.D., *Professorial Lecturer in Education*

\* On leave of absence 1964-65.



Thomas Willard Holland, LL.B., Ph.D., *Professor of Labor Economics*  
 Mary Alida Holman, Ph.D., *Associate Research Professor of Economics*  
 Robert Honeygosky, A.M., *Assistant Professor of Speech*  
 Waring Carrington Hopkins, Ph.D., *Professor of International Affairs, Naval War College Center, Newport, Rhode Island*  
 Julian Hoptman, Ph.D., *Assistant Research Professor of Microbiology*  
 Gloria Lyon Horrworth, A.M., *Assistant Professor of Education*  
 Nicholas Hotton, Ph.D., *Professorial Lecturer in Geology*  
 Charles Edwin Houston, D.C.S., *Professorial Lecturer in Business Administration*  
 Ching-Yao Hsieh, Ph.D., *Assistant Professor of Economics*  
 Rudolph Hugh, Ph.D., *Associate Professor of Microbiology*  
 Samuel Humes, Ph.D., *Associate Professorial Lecturer in Public Administration*  
 Thelma Hunt, Ph.D., M.D., *Professor of Psychology*  
 Steven John Hunter, Ph.D., *Assistant Professor of Economics*  
 Patrick Ross Huntley, Ph.D., *Associate Professor of Business Economics*  
 Gérard Paul Huvé, A.B., *Instructor in French*  
 George Idelson, B.S., *Associate Professorial Lecturer in Business Administration*  
 Rufus Isaacs, Ph.D., *Professorial Lecturer in Statistics*  
 Harold Isen, *Studio Lecturer in Art (Drawing)*  
 Margaret Ives, Ph.D., *Professorial Lecturer in Psychology*  
 David Iwamoto, A.M., Ed.D., *Assistant Professorial Lecturer in Education*  
 \*Gilbert Chester Jacobus, B.S. in C.E., M.B.A., LL.B., *Professor of Public Administration*  
 Donald Richard Janis, A.M., *Instructor in English Composition*  
 Frank Skiff Jannotta, A.B., M.D., *Assistant Professor of Pathology*  
 Ludvik Janos, Dr.rer.nat., *Visiting Associate Professor of Mathematics*  
 Herbert Jehle, Dr.Ing., *Professor of Physics*  
 Joe Lee Jessup, M.B.A., *Professor of Business Administration*  
 Eva Mayne Johnson, Ph.D., *Associate Professor of Psychology*  
 Everett Herschel Johnson, Ph.D., *Professor of Statistics*  
 Howard Odin Johnson, Ed.D., *Professorial Lecturer in Education*  
 Thomas Nick Johnson, Ph.D., *Associate Professor of Anatomy*  
 Werner Jondorf, Ph.D., *Assistant Research Professor of Pharmacology*  
 Paul Bentley Jones, M.B.A., *Assistant Professor of Business Administration; Air University Center, Maxwell Air Force Base, Alabama*  
 Robert Gean Jones, B.D., Ph.D., *Professor of Religion*  
 Robert Smith Jordan, Ph.D., D.Phil. (Oxon.), *Associate Professor of International Affairs*  
 Robert Konrad Kahn, Ph.D., *Associate Professorial Lecturer in Psychology*  
 Jacobus Martinus Kaper, Ph.D., *Associate Research Professor of Botany*  
 John Joseph Karch, Ph.D., *Professorial Lecturer in International Affairs, Institute for Sino-Soviet Studies*  
 Kenneth Casper Kates, Ph.D., *Professorial Lecturer in Zoology*  
 Erle Galen Kauffman, Ph.D., *Associate Professorial Lecturer in Geology*  
 Robert Kaye, D.B.A., *Professorial Lecturer in Business Administration*

\* On leave of absence spring semester 1964-65.

- Elmer Louis Kayser, LL.D., Ph.D., *Professor of European History; University Historian*
- Homer Hadley Kempfer, A.M., Ed.D., *Professorial Lecturer in Education*
- \*John Whitefield Kendrick, Ph.D., *Professor of Economics*
- Robert Wayne Kenny, B.J., Ph.D., *Assistant Professor of History*
- George Otto Kent, D.Phil. (Oxon.), *Professorial Lecturer in History*
- Hewitt Kenyon, Ph.D., *Associate Professor of Mathematics*
- Jackson Kelley Kern, M.B.A., *Instructor in Statistics*
- Porter Martin Kier, Ph.D., *Associate Professorial Lecturer in Geology*
- Margaret Kiley, Ed.D., *Assistant Professor of Secretarial Studies*
- James Cecil King, Ph.D., *Associate Professor of German; Assistant Dean in Columbian College of Arts and Sciences*
- Virginia Randolph Kirkbride, A.M., Ed.D., *Associate Professor of Educational Psychology; Dean of Women*
- Arthur Kirsch, Ph.D., *Associate Professorial Lecturer in Statistics*
- Donald Chenoweth Kline, B.Arch., M.F.A., *Professor of Art*
- George Martin Koehl, A.M., *Professor of Physics; Associate Dean of Columbian College of Arts and Sciences*
- Sheldon Bernard Kopp, Ph.D., *Assistant Clinical Professor of Psychology*
- Tom Kouzes, A.M. in Govt., *Professorial Lecturer in Business Administration*
- Wolfgang Herbert Kraus, Dr.Jur., S.J.D., *Professor of Political Science*
- Joseph Leo Krieger, Ph.D., *Professorial Lecturer in Business Administration*
- Ruth Krulfeld, A.B., *Assistant Professor of Anthropology*
- Richard John Kubalak, A.M., *Assistant Professorial Lecturer in Education*
- Solomon Kullback, Ph.D., *Professor of Statistics*
- Morton Kupperman, Ph.D., *Professorial Lecturer in Statistics*
- Boleslaus Kurpiewski, Ph.D., *Assistant Clinical Professor of Psychology*
- †Frederick Charles Kurtz, M.B.A., C.P.A., *Associate Professor of Accounting*
- Karen Lachowitch, A.M., *Instructor in English Composition*
- Richard Lafean, B.F.A., B.S. in Ed., *Studio Lecturer in Art (Ceramics)*
- Harry Hill Landon, Jr., Ph.D., *Associate Professorial Lecturer in Physics*
- John Carl Lang, A.M., Ed.D., *Professorial Lecturer in Education*
- Thomas Larson, A.M., *Professorial Lecturer in International Affairs, Institute for Sino-Soviet Studies*
- John Francis Latimer, Ph.D., Litt.D., *Professor of Classical Languages and Literatures; Director of Foreign Student Affairs; University Marshal*
- Esther Lawton, A.M., *Assistant Professorial Lecturer in French*
- Berton Joe Leach, Ph.D., *Assistant Professor of Zoology*
- ‡Hugh Linus LeBlanc, Ph.D., *Professor of Political Science; Coordinator, Programs in Public Affairs (including Economic Policy)*
- Luke Tsung-chou Lee, LL.B., Ph.D., *Assistant Professorial Lecturer in Law*
- Chester Elwood Leese, Ph.D., *Fry Professor of Physiology*
- Lubin Poe Leggette, A.M., Ed.D., *Depew Professor of Speech*

\* On leave of absence 1964-65.

† On sabbatical leave fall semester 1964-65.

‡ On sabbatical leave spring semester 1964-65.

- Wolfram Karl Legner, Ph.D., *Professor of German*  
 Laurence Pereira Leite, A.M., *Associate Professor of Art*  
 Joseph Alberic Leo Lemay, A.M., *Instructor in English*  
 Charles Ulysses Letourneau, A.B., M.D., B.C.L., M.S. in H.A.,  
*Professorial Lecturer in Health Care Administration*  
 Bernard Isaac Levy, Ph.D., *Professor of Psychology; Director, Graduate Training in Clinical Psychology*  
 Edwin Lewis, M.B.A., *Professor of Accounting*  
 Ralph Kepler Lewis, A.M., *Assistant Professor of Anthropology*  
 Verne Bruce Lewis, Ed.B., A.M., *Associate Professorial Lecturer in Public Administration*  
 Hubert Whitman Lilliefors, Ph.D., *Associate Professor of Statistics*  
 Calvin Darlington Linton, Ph.D., *Professor of English Literature; Dean of Columbian College of Arts and Sciences*  
 Gordon Leslie Lippitt, B.D., Ph.D., *Professor of Behavioral Sciences; Director, Center for Behavioral Sciences*  
 \*Thomas Phillip George Liverman, Ph.D., *Professor of Mathematics*  
 Eulogia Llansa, Doctor en Ciencias Politicas, Sociales, y Economicas;  
*Doctor en derecho, Instructor in Spanish*  
 Kurt London, Ph.D., *Professor of International Affairs; Director, Institute for Sino-Soviet Studies*  
 Nicholas Long, Ph.D., *Associate Professorial Lecturer in Education*  
 William Long, A.M., *Assistant Professor of Economics*  
 Hortense Sarah Louckes, Ph.D., *Associate Research Professor of Physiology*  
 Florence Kennedy Lowndes, A.M., *Assistant Professorial Lecturer in Speech*  
 †Howard Rowland Ludden, A.M., *Associate Professor of Political Science*  
 William Allan MacDonald, Ph.D., *Professor of Art and Archaeology*  
 Bela Maday, Ph.D., *Professorial Lecturer in International Affairs, Institute for Sino-Soviet Studies*  
 Richard Allen Madigan, A.B., *Instructor (part-time) in Art*  
 William Everett Maloney, M.S., *Associate Professorial Lecturer in Geology*  
 Harold George Mandel, Ph.D., *Professor of Pharmacology*  
 Anthony Marinaccio, Ph.D., *Professorial Lecturer in Education*  
 Noel Gene Markwell, Ph.D., *Assistant Clinical Professor of Psychology*  
 Robert Franklin Marler, Jr., B.S.E., A.M., *Instructor in English*  
 William Henry Marlow, Ph.D., *Professorial Lecturer in Mathematics*  
 William Laverne Marsh, B.S., M.D., *Associate Professor of Pathology*  
 Albert Maslow, Ph.D., *Professorial Lecturer in Psychology*  
 Kathleen Criddle Mason, A.B., B.F.A., *Instructor in Physical Education for Women*  
 David Hill Massie, *Instructor (part-time) in Geology*  
 Paul Mazel, Ph.D., *Assistant Professor of Pharmacology*  
 Guido Ettore Mazzeo, Ph.D., *Associate Professor of Romance Languages*  
 John Francis McCarthy, Jr., A.B., M.L., *Associate Professor of Business Administration*  
 \*William Andrew McCauley, Ph.D., *Professor of Education*  
 Muriel Hope McClanahan, Ph.D., *Associate Professor of English Composition*

\* On sabbatical leave 1964-65.

† On leave of absence 1964-65.



Kenneth Frederick McClure, M.S., LL.B., *Professorial Lecturer on Commercial Law*

William Edward McConville, A.M., *Assistant Professorial Lecturer in Public Administration*

Edward McCrensky, Ed.M., *Professorial Lecturer in Public Administration*

Shirley Dickinson McCune, B.S., M.S.W., *Assistant Professorial Lecturer in Education*

Carl Oscar McDaniels, A.B., Ed.M., *Associate Professorial Lecturer in Education*

James Kenneth McDonald, A.B., B.Litt. (Oxon.), *Assistant Professor of International Affairs; Acting Coordinator, Naval War College Center, Newport, Rhode Island*

Damian McElrath, OFM, A.B., S.T.L., D.H.E., *Associate Professorial Lecturer in Religion*

Mabel Vierling McEwan, A.B., *Instructor (part-time) in Physical Education for Women*

Margaret McIntyre, B.S. in Ed., A.M., *Assistant Professor of Education*

Constance Russell McKay, *Studio Lecturer in Applied Music (Piano)*

Francis Xavier McKenna, LL.B., *Assistant Professorial Lecturer in Business Administration*

Marian McNabb, Mus.B., M.S.M., *Studio Lecturer in Applied Music (Piano)*

George Elbert McSpadden, Ph.D., *Professor of Romance Languages*

Timothy Dean Mead, A.M., *Instructor in Political Science*

Florence Marie Mears, Ph.D., *Professor of Mathematics*

Malcolm Lee Meltzer, Ph.D., *Associate Clinical Professor of Psychology*

Howard Maxwell Merriman, Ph.D., *Professor of American Diplomatic History*

Joseph Louis Metivier, Jr., A.M., *Associate Professor of Romance Languages; Adviser to Special Students and Acting Assistant Dean, Columbian College of Arts and Sciences*

Lothar Metzl, Dr.Jur., *Professorial Lecturer in International Affairs, Institute for Sino-Soviet Studies*

Franz Michael, Dr.Jur., *Professor of International Affairs; Associate Director, Institute for Sino-Soviet Studies*

Carrol Milton Mickey, Ph.D., *Associate Professor of Health Care Administration*

Frank Nelson Miller, Jr., B.S., M.D., *Professor of Pathology*

Helen Lucille Mitchell, A.M., *Associate Professorial Lecturer in Education*

Joseph Monane, Ph.D., *Associate Professor of Sociology*

John Judson Monroe, A.M., *Assistant Professorial Lecturer in English*

William Layton Montgomery, Mus.M., *Assistant Professorial Lecturer in Music (Flute)*

Margaret Wheeler Montzka, A.M., *Assistant Professor of Physics*

Roy Edgar Moor, Ph.D., *Professorial Lecturer in Economics*

Robert Hamilton Moore, Ph.D., *Professor of English Composition*

John Andrew Morgan, Jr., Ph.D., *Assistant Professor of Political Science*

Mabel Elizabeth Morris, A.M., *Assistant Professorial Lecturer in Mathematics*

John Anthony Morrow, A.M., *Associate Professorial Lecturer in Business Administration*

Edith Elizabeth Mortensen, Ph.D., *Professor of Zoology*  
 James Norman Mosél, A.M., *Professor of Psychology*  
 Margaret Harrison Moss, A.M., *Instructor in Special Education*  
 Robert Phillip Multhauf, Ph.D., *Professorial Lecturer in History*  
 Sam Clark Munson, Ph.D., *Professor of Biology*  
 Joseph Patrick Murphy, A.B., LL.B., LL.M., *Professorial Lecturer in Business Administration*  
 William Henry Myers, A.B., A.M. in Ed., *Professor of Physical Education for Men*  
 Charles Rudolph Naeser, Ph.D., *Professor of Chemistry*  
 Anthony Nassner, Tech. Sgt., USAF, *Instructor in Aerospace Studies*  
 Cynthia Rice Nathan, A.M., *Associate Professorial Lecturer in Sociology*  
 Robert Arthur Naylor, Ph.D., *Visiting Associate Professor of History*  
 Nels David Nelson, Ph.D., *Professor of Mathematics*  
 Phillip Gillard Nelson, M.D., Ph.D., *Associate Professorial Lecturer in Physiology*  
 William Newman, A.B., M.D., *Professor of Pathology*  
 Clinton Andrew Neyman, Jr., A.M., *Assistant Research Professor of Education*  
 Elizabeth Sutherland Neyman, A.M., *Assistant Professor of Spanish*  
 Andrew Anthony Nilles, A.B., LL.B., *Assistant Professorial Lecturer in Speech*  
 Benjamin Nimer, Ph.D., *Associate Professor of Political Science*  
 Mary Elizabeth Norton, A.M., *Assistant Professorial Lecturer in Latin*  
 Eugenia Campbell Nowlin, A.M., *Associate Professorial Lecturer in Education*  
 Beatrice O'Donnell, A.B., *Instructor in English Composition*  
 Karl Ferdinand Oerlein, Ph.D., *Assistant Professorial Lecturer in Physics*  
 Elizabeth O'Hern, Ph.D., *Assistant Professor of Microbiology*  
 George Andrew Olkhovsky, A.M., *Assistant Professor of Russian*  
 Heinz Dieter Osterle, Ph.D., *Associate Professor of German*  
 Willard Overgaard, A.M., *Assistant Professor of International Affairs, Air University Center, Maxwell Air Force Base, Alabama*  
 Gene Donald Overstreet, Ph.D., *Associate Professor of International Affairs, Institute for Sino-Soviet Studies*  
 Harry Robert Page, M.B.A., *Assistant Professor of Business Administration; Coordinator, Program in Business Administration; Acting Coordinator, Program in Public Administration*  
 Chei-Min Paik, D.B.A., *Assistant Professor of Accounting*  
 Joanne Bouthilet Parker, A.B., A.M. in Ed., *Assistant Professor of Education; Assistant Director of the Reading Center*  
 Kittie Fenley Parker, Ph.D., *Visiting Associate Professor of Botany*  
 Robert Carleton Parlett, Ph.D., M.D., *Professor of Microbiology*  
 Robert Parris, M.S. in Mus. Ed., B.S. in Mus. Comp., *Assistant Professor of Music*  
 Thomas Martin Peery, A.B., M.D., *Professor of Pathology*  
 Beatrice Pearl Perazzo, *Instructor in Spanish*  
 Carl Lewis Perian, A.M., *Professorial Lecturer in Sociology*  
 Jack Perlmutter, *Studio Lecturer in Art (Print Making)*  
 Theodore Peter Perros, Ph.D., *Professor of Chemistry*  
 Victor Petrov, Ph.D., *Professorial Lecturer in Geography, Institute for Sino-Soviet Studies*

Calvin Weir Pettit, Ph.D., *Professor of Speech; Director of Speech Clinic*

Vaclav Pfeffer, M.S., *Assistant Professor of Mathematics*

Carl Herman Pfuntner, A.M., *Assistant Professor of Philosophy*

Ewing Lakin Phillips, Ph.D., *Professor of Psychology; Director, Psychological Center*

Jack Warren Pierce, Ph.D., *Associate Professor of Geology*

Lois Irene Platt, A.B., M.D., *Assistant Professor of Pathology (Cytology)*

Lucian Brewster Platt, Ph.D., *Associate Professor of Geology*

Richard James Podolsky, Ph.D., *Assistant Professorial Lecturer in Physiology*

Ross Pollock, A.M., *Associate Professorial Lecturer in Public Administration*

Earl Elton Pontius, Jr., M.B.A., C.P.A., *Associate Professorial Lecturer in Accounting*

Nadine Nadeshda Popluiko, Ph.D., *Assistant Professor of Russian*

Cecelia Hopkins Porter, A.M., *Studio Lecturer in Applied Music (Piano and Flute)*

Ben Posner, Ph.D., *Professorial Lecturer in Public Administration*

Francisco Prats, Ph.D., *Assistant Professor of Physics*

John Provan, M.S., *Associate Professorial Lecturer in Public Administration*

Ralph Elliott Purcell, Ph.D., *Visiting Professor of Political Science*

Virginia Cardwell Purdy, A.M., *Assistant Professorial Lecturer in History*

Marjorie Quandt, A.B. in B.A., *Assistant Professorial Lecturer in Health Care Administration*

Jon Alrik Quitslund, A.B., *Assistant Professor of English*

Herbert Rabin, Ph.D., *Associate Professorial Lecturer in Physics*

David Platt Rall, M.D., Ph.D., *Assistant Professorial Lecturer in Physiology*

Bernard Ramundo, LL.B., A.M., *Assistant Professorial Lecturer in Law*

Martha Norman Rashid, Ph.D., *Associate Professor of Education*

Charles Bass Reed, B.S. in P.E., *Instructor in Physical Education for Men*

John Palmer Reesing, Jr., Ph.D., *Professor of English Literature*

John Francis Regan, M.B.A., *Assistant Professorial Lecturer in Business Administration*

Bernard Reich, A.M., *Assistant Professor of Political Science*

Melvin Reich, Ph.D., *Assistant Professor of Microbiology*

Peggy Kelley Reinburg, A.B., *Studio Lecturer in Applied Music (Organ)*

William Jennings Reinhart, B.B.A., *Instructor (part-time) in Physical Education for Men; Head Coach of Basketball and Baseball*

Armand Edouard Reiser, Lt. Col., USAF, B.S. in F.S., A.M. in Govt., *Professor of Aerospace Studies; Director of the Division of Aerospace Studies*

Madeline Kinter Remmlein, Ph.D., J.D., *Professorial Lecturer in Education*

Floyd Millard Riddick, Ph.D., *Professorial Lecturer in Political Science*

Robert Meldrum Riggs, A.M., *Assistant Professor of French*

James Willis Robb, Ph.D., *Associate Professor of Romance Languages*

Mary Louise Robbins, Ph.D., *Professor of Microbiology*

Robert Earl Roberts, A.B., *Instructor (part-time) in Speech*



James Irvin Robertson, Jr., Ph.D., *Associate Professorial Lecturer in History*  
 Louis Robinson, A.B., *Assistant Professorial Lecturer in Journalism*  
 James Franklin Rogers, Ph.D., *Professorial Lecturer in Education*  
 James Rudolph Roman, Jr., M.B.A., *Instructor in Business Administration*  
 Blake Smith Root, A.M., Ed.D., *Professor of Education; Assistant Dean of the School of Education*  
 Alexander Russo, B.F.A., *Studio Lecturer in Art (Drawing and Painting)*  
 Robert Clinton Rutledge, A.M., *Assistant Professor of English*  
 Thomas Saaty, Ph.D., *Professorial Lecturer in Mathematics*  
 Paul Sadagursky, M.S., *Assistant Professor of Mathematics*  
 William Frederick Sager, Ph.D., *Professor of Chemistry*  
 Carol Ruth St. Cyr, Ph.D., *Professor of Education*  
 Minoru Sakaguchi, Ph.D., *Visiting Professor of Statistics*  
 Robert Sammons, A.M., M.P.A., *Associate Professorial Lecturer in Economics*  
 \*Keith Russell Sanders, M.S., *Assistant Professor of Speech*  
 Victoria Kochurova Sandor, M.S., *Assistant Professor of Slavic Languages and Literatures*  
 Andrea Lee DiPiero Santer, A.B., *Instructor in English Composition*  
 John Albert Schaffer, B.S. in Ed., M.S. in H.A., *Assistant Professorial Lecturer in Health Care Administration*  
 Geza Schay, Ph.D., *Assistant Professor of Mathematics*  
 Isidor Wolfe Scherer, Ph.D., *Clinical Professor of Psychology*  
 Stefan Otto Schiff, Ph.D., *Assistant Professor of Zoology*  
 Ross Pelton Schlabach, Jr., M.S., *Professor of Journalism*  
 Richard Harold Schlagel, Ph.D., *Associate Professor of Philosophy*  
 Lawrence Erwin Schlesinger, Ph.D., *Associate Research Professor of Psychology*  
 William Edward Schmidt, Ph.D., *Professor of Chemistry*  
 \*Wilson Emerson Schmidt, Ph.D., *Professor of Economics*  
 Berthold Schmutzhart, *Studio Lecturer in Art (Advertising Design)*  
 Arlo Schultz, B.S., *Instructor in Russian*  
 Maurice Herbert Schwartz, A.B., *Professorial Lecturer in Business Administration*  
 Abraham Schwebel, Ph.D., *Associate Professorial Lecturer in Chemistry*  
 Lois Schwoerer, Ph.D., *Associate Professorial Lecturer in History*  
 Norman Orville Scribner, Jr., Mus.B., *Studio Lecturer in Applied Music (Organ)*  
 Katherine Faber Scrivener, A.M. in Ed., *Associate Professorial Lecturer in Education*  
 Edward William Seaman, A.B., M.H.L., Rabbi, *Assistant Professorial Lecturer in Religion*  
 Aaron Bear Seidman, A.M., Rabbi, *Assistant Professorial Lecturer in Classical Hebrew*  
 Felix Ira Shaffner, Ph.D., *Professorial Lecturer in Business Administration*  
 Sally Oleon Shames, Ed.M., Ph.D., *Assistant Professorial Lecturer in Political Science*  
 Robert Poindexter Sharkey, Ph.D., *Associate Professor of Economic History*  
 Ernest Sewall Shepard, A.M., *Professor of English Literature*

\* On leave of absence 1964-65.

- Ellis Irving Shook, A.B., *Assistant Professorial Lecturer in Speech*  
 Walter Allen Shropshire, Jr., Ph.D., *Associate Professorial Lecturer in Botany*  
 Robert Sumner Sigafos, Ph.D., *Associate Professorial Lecturer on Plant Ecology*  
 Richard Baker Simons, Ph.D., *Associate Professorial Lecturer in History*  
 Clark Simpson, M.C.S., C.P.A., *Professorial Lecturer in Accounting*  
 Joseph Richard Sizoo, A.M., D.D., Litt.D., LL.D., L.H.D., S.T.D., *Milbank Professor of Religion; Director of University Chapel*  
 John William Skinner, Ph.D., *Professor of Economics*  
 Charles Henry Slayman, Jr., LL.B., *Assistant Professorial Lecturer in Political Science*  
 Clarence Clell Smarr, Staff Sgt., USAF, *Instructor in Aerospace Studies*  
 Benjamin Williams Smith, Ph.D., *Associate Professor of Biochemistry*  
 Lowell Cyrus Smith, M.B.A., *Assistant Professor of Business and Public Administration, Air University Center, Maxwell Air Force Base, Alabama*  
 Lyman Bradford Smith, Ph.D., *Professorial Lecturer on Plant Taxonomy*  
 Nan Byrd Smith, B.S., *Instructor in Physical Education for Women*  
 Ralph Grafton Smith, M.D., Ph.D., *Clinical Professor of Pharmacology*  
 Thomas Russell Smith, B.J., *Assistant Professorial Lecturer in Journalism*  
 William Arthur Smith, A.M., *Associate Professor of Mathematics*  
 John Michael Smothers, Ph.D., *Assistant Clinical Professor of Psychology*  
 Jeanne Ellen Snodgrass, A.B., M.S. in P.E., *Associate Professor of Physical Education for Women*  
 Israel Gregory Sohn, A.M., *Professorial Lecturer on Paleontology*  
 Henry Solomon, Ph.D., *Associate Professorial Lecturer in Economics*  
 Waldo Sommers, Ph.D., *Professor of Public Administration*  
 Mimi Johnson Spielberg, Ph.D., *Assistant Clinical Professor of Psychology*  
 Loretta May Stallings, A.M., *Associate Professor of Physical Education for Women; Director of Women's Athletics*  
 George Stambuk, Ph.D., *Associate Professor of International Affairs, Naval War College Center, Newport, Rhode Island*  
 Selig Starr, Ph.D., *Assistant Professorial Lecturer in Statistics*  
 Ira Ernest Steele, A.M., *Professorial Lecturer in Accounting*  
 Carl Steiner, A.M., *Instructor in German*  
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\* On sabbatical leave spring semester 1964-65.

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Ralph Kirby White, Ph.D., *Professor of Social Psychology*

Norman Arthur Wiegmann, Ph.D., *Professor of Mathematics*

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\* On leave of absence 1964-65

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Ralph Aubrey Young, Ph.D., *Director, Division of Research and Statistics, Board of Governors, Federal Reserve System; International Finance*

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 Charles Hal Silver, B.S., *Fellow in Microbiology*  
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**GRADUATE COUNCIL:** Doctor of Philosophy (Ph.D.)

**SCHOOL OF MEDICINE:** Doctor of Medicine (M.D.)

**NATIONAL LAW CENTER:**

**LAW SCHOOL:** Bachelor of Laws (LL.B.)

**GRADUATE SCHOOL OF PUBLIC LAW:** Master of Laws (LL.M.), Master of Comparative Law (M.Comp.L.), and Doctor of Juridical Science (S.J.D.)

**SCHOOL OF ENGINEERING AND APPLIED SCIENCE:** Engineering Technologist Certificate (E.T.C.), Bachelor of Science (B.S.), Master of Science (M.S.), Master of Engineering Administration (M.E.A.), and Doctor of Science (D.Sc.)

**SCHOOL OF EDUCATION:** Bachelor of Arts in Education (A.B. in Ed.), Bachelor of Science in Physical Education (B.S. in P.E.), Master of Arts in Teaching (A.M. in T.), Master of Arts in Education (A.M. in Ed.), Education Specialist (Ed.S.), and Doctor of Education (Ed.D.)

**SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS:** Bachelor of Arts in Government (A.B. in Govt.), Bachelor of Business Administration (B.B.A.), Master of Arts in Government (A.M. in Govt.), Master of Business Administration (M.B.A.), Master of Public Administration (M.P.A.), Doctor of Business Administration (D.B.A.), and Doctor of Public Administration (D.P.A.)

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*Jessie Bigelow Martin, A.B., Editor of Academic Publications*



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# THE GEORGE WASHINGTON UNIVERSITY

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THE GRADUATE SCHOOL OF PUBLIC LAW, 1959

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THE UNIVERSITY HOSPITAL, 1898

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THE UNIVERSITY RECORD FOR 1964-1965



JULY 1965



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THE UNIVERSITY OF CHICAGO



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James Russell Wiggins, LL.D.  
\*James Otis Wright, B.S., LL.B.

#### TERM ENDING 1967

George A. Butler, LL.B.  
\*Donald C. Cook, A.B., M.B.A., J.D., LL.M.  
Robert Vedder Fleming, LL.D., *Chairman Emeritus*  
Brooks Hays, A.B., LL.B., LL.D., L.H.D., D.C.L., D.D.  
Joseph D. Hughes, B.S., LL.B., LL.M., LL.D.  
Franklin Jerome Lunding, LL.B., LL.D.  
Edward Karrick Morris, LL.D.  
Godfrey Leon Munter, A.B., LL.B., LL.D.  
Charles Emory Phillips, LL.B., LL.M.  
\*James Cornelius Van Story, Jr., A.M.  
Watson W. Wise, Ph.B.

#### TERM ENDING 1968

Wiley Thomas Buchanan, Jr., LL.D.  
Eugene Cassin Carusi, A.M., J.D.  
Miss Jacqueline Cochran, D.H.L., LL.D., Sc.D.

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 Frederick Russell Houser, A.M. in Govt., *Registrar*  
 Elmer Louis Kayser, Ph.D., LL.D., *University Historian*  
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 Benjamin Douglass Van Evera, Ph.D., Sc.D., *Dean for Sponsored Research*  
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 L.H.D., *Administrator of the National Law Center*  
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 Harold Frederick Bright, Ph.D., *Acting Dean of the School of Government, Business, and International Affairs*  
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 John Gage Allee, Jr., Ph.D., *Dean of the Division of University Students*  
 Armand Edouard Reiser, B.S. in F.S., A.M. in Govt., *Director of the Division of Aerospace Studies*  
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 Angus MacIvor Griffin, Ph.D., *Associate Dean of the School of Medicine*  
 Alvin Edward Parrish, M.D., *Associate Dean of the School of Medicine*  
 Victor Frederick Ludewig, B.S., *Administrator of the University Hospital*  
 James Cecil King, Ph.D., *Assistant Dean in Columbian College of Arts and Sciences*  
 William Lewis Turner, Ph.D., *Assistant Dean in Columbian College of Arts and Sciences*  
 William Wallace Kirkpatrick, A.B., LL.B., *Assistant Dean of the Law School*  
 Edward Andrew Potts, A.B., LL.B., *Assistant Dean of the Law School*



Nelson Thomas Grisamore, Ph.D., *Assistant Dean (Research) of the School of Engineering and Applied Science; Director, Center for Measurement Science*

Herbert Ernest Smith, Ph.D., *Assistant Dean (Academic) of the School of Engineering and Applied Science*

Robert Edward Baker, A.M., Ed.D., *Assistant Dean of the School of Education*

Blake Smith Root, A.M., Ed.D., *Assistant Dean of the School of Education*

James Carlton Dockeray, Ph.D., *Assistant Dean (Programs in Government and Business) of the School of Government, Business, and International Affairs*

Hiram Miller Stout, Ph.D., *Assistant Dean (Programs in International Affairs) of the School of Government, Business, and International Affairs*

Lowell Winfield Williams, B.S. in Eng., M.S. in P.A., *Assistant Dean of the School of Government, Business, and International Affairs*

James Grady Brown, A.M., Ed.D., *Assistant Dean (Administration) of the College of General Studies*

Robert Whittington Eller, B.S., Ed.D., *Assistant Dean (Special Projects) of the College of General Studies*

Richard Baker Simons, Ph.D., *Assistant Dean (Academic Affairs) of the College of General Studies*

Elizabeth Truman Wright, A.M., *Assistant Dean of the Division of University Students*

Robert Lee Williams, A.M., Ed.D., *Acting Assistant Dean of the Division of University Students*

Nelson Mead Head, B.S., *Assistant Dean for Sponsored Research*

Isabella Frances Young, A.B. in L.S., *Librarian of the Medical Library*

Hugh Yancey Bernard, A.B., B.S. in L.S., J.D., *Librarian of the Law Library*

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### COMMITTEE ON ACADEMIC POLICY

The deans of the degree-granting schools and colleges of the University are members of the Committee on Academic Policy, whose chairman is the President of the University and whose vice-chairman is the Vice President and Dean of Faculties. The Dean for Sponsored Research, the Administrator of the National Law Center, and the Dean of the Division of University Students serve as ex officio members. The President on occasion may invite members of the Board of Trustees, representatives of Faculty Senate committees, and the President of the General Alumni Association to attend Committee meetings.

### COMMITTEE ON ADMINISTRATIVE POLICY

The Committee on Administrative Policy, whose chairman is the President of the University and whose vice-chairman is the Vice President and Treasurer, is composed of the following members: the

Vice President and Treasurer, the Dean for Sponsored Research, the Administrator of the University Hospital, the Assistant Vice President --Resources, the Comptroller, the Director of Admissions, the Registrar, the Executive Assistant to the President, the Business Manager, the Director of Personnel Services, the Assistant Treasurer and Director of the Office of Student Financial Aid, and the other Assistant Treasurer(s). The Vice President and Dean of Faculties serves as an ex officio member. The President on occasion may invite members of the Board of Trustees, representatives of the Faculty Senate committees, and the President of the General Alumni Association to attend Committee meetings.

#### COMMITTEE ON LIBRARY

Robert Hamilton Moore, <i>Chairman</i>	William Allan MacDonald
Seymour Alpert	John Russell Mason
David Crittendon Green	Robert Corbin Vincent

#### COMMITTEE ON RESEARCH

Arthur Edward Burns, <i>Chairman</i>	Herman Hedberg Hobbs
Robert Edward Baker	Benjamin Douglass Van Evera
Angus MacIvor Griffin	Robert Harris Walker, Jr.
Nelson Thomas Grisamore	

#### COMMITTEE ON INTERCOLLEGIATE ATHLETICS

Theodore Peter Perros, <i>Chairman</i>	Claud Max Farrington
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#### COMMITTEE ON STUDENT FINANCIAL AID

Raymond Richard Fox, <i>Chairman</i>	William Lewis Turner
Harry Grubb Detwiler	Robert Corbin Vincent
Maurice Kingsley Heartfield, Jr.	Paul Vernon Bissell, ex officio
Joseph Young Ruth	Virginia Randolph Kirkbride, ex officio

### Committees on Student Affairs

#### COMMITTEE ON STUDENT LIFE

Eva Mayne Johnson, <i>Chairman</i>	Theodore Peter Perros
Paul Vernon Bissell	Robert Meldrum Riggs
Virginia Randolph Kirkbride	Elizabeth Truman Wright
George Martin Koehl	Six Student Members

#### COMMITTEE ON THE PERFORMING ARTS

Donald Chenoweth Kline, <i>Chairman</i>	Charles William Cole
Elizabeth Burtner	Lubin Poe Leggette
James Harold Coberly	George Steiner
	Five Student Members

#### COMMITTEE ON STUDENT PUBLICATIONS

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Blaine Richard Berg	Robert Crumpton Willson
Henry Reinz	Two Student Members
John William Skinner	

#### COMMITTEE ON RELIGIOUS LIFE

Robert Gean Jones, <i>Chairman</i>	Calvin Weir Pettit
Amelia Carew	Helen Bates Yakobson
Elmer Louis Kayser	Two Student Members

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Seymour Alpert	*Calvin Darlington Linton
*Grover LaMarr Angel	*Martin Alexander Mason
†Galip Mehmet Arkilic	Howard Maxwell Merriman
John Withrow Brewer	Frank Nelson Miller, Jr.
*Harold Frederick Bright	Charles Rudolph Naeser
*John Anthony Brown, Jr.	Benjamin Nimer
*Arthur Edward Burns	*Charles Bernard Nutting
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Mary Ellen Coleman	Robert Carleton Parlett
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Roy Brandon Eastin	Carol Ruth St. Cyr
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Robert Bernard Heller	Glen Earl Weston
*Frederick Russell Houser	Reuben Esselstyn Wood
*Robert Kramer	( <i>Chairman of the Executive</i>
Wolfgang Herbert Kraus	<i>Committee</i> )
Gust Angelo Ledakis	Helen Bates Yakobson

\* Ex officio member.

† For Raymond Richard Fox, who is on sabbatical leave 1965-66.



## Faculty of The University 1965-66

### EMERITI

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Errett Cyril Albritton, A.B., M.D., *Professor Emeritus of Physiology*

Antonio Alonso, A.M., *Professor Emeritus of Spanish*

Harry Ford Anderson, M.D., *Professor Emeritus of Dermatology and Syphilology*

Ruth Harriet Atwell, A.M. in Ed., *Professor Emeritus of Physical Education for Women*

Ralph Gregory Beachley, M.D., Dr. P.H., *Professor Emeritus of Clinical Public Health Practice*

Carville Dickinson Benson, A.B., LL.B., S.J.D., *Professor Emeritus of Law in Residence*

Walter Andrew Bloedorn, A.M., M.D., Sc.D., *Professor Emeritus of Medicine*

Gretchen Rogers Bolwell, Ph.D., *Professor Emeritus of German*

Robert Whitney Bolwell, Ph.D., Litt.D., *Professor Emeritus of American Literature*

Daniel LeRay Borden, A.M., M.D., Sc.D., *Professor Emeritus of Clinical Surgery*

Paul William Bowman, Ph.D., *Professor Emeritus of Biology*

Roger Morrison Choisser, B.S., M.D., *Professor Emeritus of Pathology*

Elbridge Colby, Ph.D., *Professor Emeritus of Journalism*

Oswald Symister Colclough, B.S., LL.B., LL.D., Sc.D., *Professor Emeritus of Law; Dean of Faculties Emeritus*

Charles Sager Collier, A.B., LL.B., S.J.D., *Professor Emeritus of Law*

Robert McKinney Cooper, Ph.M., J.D., *Professor Emeritus of Law*

Ronald Atmore Cox, A.B., M.D., *Professor Emeritus of Ophthalmology*

George Bowdoin Craighill, A.B., LL.B., *Professor Emeritus of Law*

Norris Ingersoll Crandall, M.Arch., *Professor Emeritus of Art*

Benjamin Carpenter Cruickshanks, B.S. in M.E., *Professor Emeritus of Mechanical Engineering*

Henry Laurant Darner, A.B., M.D., *Professor Emeritus of Clinical Obstetrics and Gynecology*

Alan Thomas Deibert, A.M., *Professor Emeritus of Romance Languages*

Paul Frederick Dickens, M.D., *Professor Emeritus of Clinical Medicine*

William Webster Diehl, Ph.D., *Professor Emeritus of Mycology*

Frederick Morris Feiker, B.S. in E.E., D.Eng., *Professor Emeritus of Engineering Administration*

James Harold Fox, A.M., Ed.D., *Professor Emeritus of Education*

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William Herndon Jenkins, M.D., *Professor Emeritus of Otolaryngology*

Arlin Rex Johnson, Ph.D., *Professor Emeritus of Business Administration*

Francis Edgar Johnston, Ph.D., *Professor Emeritus of Mathematics*

Ralph Dale Kennedy, Ph.D., *Professor Emeritus of Accounting in Residence*  
 Francis Kirkpatrick, A.M., *Professor Emeritus of Home Economics*  
 Helen Bennett Lawrence, A.M., *Professor Emeritus of Physical Education for Women in Residence*  
 Chester Elwood Leese, Ph.D., *Professor Emeritus of Physiology*  
 Edward Lewis, M.D., *Professor Emeritus of Clinical Pediatrics*  
 John Russell Mason, A.M., M.S. in L.S., *Librarian Emeritus; Curator of Art Emeritus*  
 Preston Alexander McLendon, B.S., M.D., *Professor Emeritus of Pediatrics*  
 Daniel Bruce Moffett, M.D., *Professor Emeritus of Otolaryngology*  
 James Oliver Murdock, Ph.B., LL.B., *Professor Emeritus of Law*  
 Fred Everett Nessell, A.B., *Registrar Emeritus*  
 Alvin LeRoy Newmyer, LL.B., *Professor Emeritus of Law*  
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 Frederick A. Reuter, M.D., *Professor Emeritus of Urology*  
 Joseph Hiram Roe, Ph.D., *Professor Emeritus of Biochemistry*  
 George Byron Roth, A.B., M.D., *Professor Emeritus of Pharmacology*  
 Alfred Francis William Schmidt, A.M., *Professor Emeritus of Library Science*  
 Myrna Pauline Sedgwick, A.B., *Administrative Secretary Emeritus*  
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 Jeffrey Marshall Albert, A.B., LL.M., *Associate Professor of Law*  
 Theodore Crandall Alford, A.B., M.D., *Associate Professor of Surgery*  
 Frank Duane Allan, Ph.D., *Associate Professor of Anatomy*  
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 Seymour Alpert, A.B., M.D., *Professor of Anesthesiology*  
 Alice Altstatt, A.M., M.D., *Instructor in Anesthesiology*  
 William Staton Anderson, A.B., M.D., *Clinical Professor of Pediatrics*  
 Avery DeLano Andrews II, LL.B., Ph.D., *Assistant Professor of History*  
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 John Charles Bartone, Ph.D., *Assistant Professor of Anatomy*  
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 Phillip Bell, Ph.D., *Professor of Mathematics*  
 Otto Bergmann, Ph.D., *Associate Professor of Physics*  
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 Dorothy Marshall Betz, A.M., *Instructor in French*  
 Joginder Nath Bhayana, Med.B., B.Surg., *Instructor in Surgery*  
 Lee Sheward Bielski, A.M., *Associate Professor of Speech*  
 Alden Hirsh Blackman, A.B., M.D., *Instructor in Medicine*  
 Brian Blades, A.B., M.D., *Lewis Saltz Professor of Surgery*  
 Roland Richard Bonato, Ph.D., *Assistant Research Professor of Psychology*  
 John Gordon Boswell, A.M., Ed.D., *Assistant Professor of Education*  
 Perry Botwin, A.M., Ed.D., *Professor of Education*  
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 Alexander Breslow, M.S., M.D., *Assistant Professor of Pathology*  
 John Withrow Brewer, Ph.D., *Professor of International Law*



Michael Brewer, Ph.D., *Professor of Economics; Director, Natural Resources Policy Center*

Harold Frederick Bright, Ph.D., *Professor of Statistics; Associate Dean of Faculties; Acting Dean of the School of Government, Business, and International Affairs*

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Diana Paul Bronte, A.B., *Instructor in French*

David Springer Brown, Ph.D., *Professor of Public Administration*

James Grady Brown, A.M., Ed.D., *Associate Professor of Business Administration; Assistant Dean (Administration) of the College of General Studies*

James Milton Brown, A.B., LL.B., *Associate Professor of Law*

John Anthony Brown, Jr., A.M., L.H.D., LL.D., *Professor of International Affairs; Vice President and Dean of Faculties*

\* Murray Brown, Ph.D., *Associate Professor of Econometrics*

Robert Guy Brown, Ph.D., *Associate Professor of Sociology*

Stephen Jeffry Brown, Ph.D., *Associate Professor of English Literature*

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Daniel Bures, A.M., *Instructor in Russian*

Elizabeth Jean Burkley, B.F.A., A.M., *Instructor in French*

James Burks, Ph.D., *Associate Professor of French*

Arthur Edward Burns, Ph.D., *Professor of Economics; Dean of the Graduate Council*

Elizabeth Burtner, A.M., *Professor of Physical Education for Women*

Stewart William Bush, B.S., M.D., *Associate Professor of Medicine*

Cesar Augusto Caceres, B.S., M.D., *Associate Professor of Medicine*

Paul Calabrisi, Ph.D. (Cantab.), *Professor of Anatomy*

Juan Calatayud, M.D., *Assistant Professor of Medicine*

Willard Edmund Caldwell, Ph.D., *Professor of Psychology*

Elwood Wilbur Camp, A.B., M.S. in S.W., M.H.A., *Associate Professor of Hospital Administration*

Robert Dale Campbell, Ph.D., *Professor of Geography*

Rosemary Capusan, M.B.A., *Assistant Professor of Health Care Administration*

Edward Caress, Ph.D., *Assistant Professor of Chemistry*

Gerald Vincent Carroll, Ph.D., *Professor of Geology*

Wesley Thomas Carroll, Ph.D., *Professor of Education*

Marie Mullaney Cassidy, Ph.D., *Assistant Professor of Physiology*

Joan Patricia Caton, A.M., *Instructor in English*

John Bert Christensen, Ph.D., *Associate Professor of Anatomy*

John Cibinic, Jr., A.B., J.D., *Associate Professor of Law in the Graduate School of Public Law; Assistant Director, Government Contracts Program*

Esat Ozcan Cirpili, M.D., *Visiting Assistant Professor of Physiology*

Ira Hubert Cisin, Ph.D., *Professor of Sociology*

Astere Evarist Claeysens, Jr., A.M., *Associate Professor of English*

Gayle Clapp, M.S., *Assistant Professor of Physical Education for Women*

Harold William Clark, Jr., Ph.D., *Assistant Research Professor of Medicine (Biochemistry)*

Thomas Akroyd Clingan, Jr., B.S., J.D., *Associate Professor of Law; Faculty Editor-in-Chief, The George Washington Law Review*

Daniel Raymond Cloutier, Ph.D., *Associate Professor of Public Administration*

\* On leave of absence 1965-66.

- \*Louise George Clubb, Ph.D., *Associate Professor of English*  
 William Graham Clubb, Ph.D., *Professor of French*  
 Charles Seymour Coakley, M.D., *Professor of Anesthesiology*  
 James Harold Coberly, Ph.D., *Professor of American Literature*  
 Victor Hugo Cohn, Jr., Ph.D., *Associate Professor of Pharmacology*  
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 Janet Chase Collins, A.M., *Instructor in English*  
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 George Frederick Conner, M.B.A., *Assistant Professor of Business Administration*  
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 Milton Corn, B.S., M.D., *Associate Professor of Medicine*  
 John Walker Coughlan, Ph.D., C.P.A., *Professor of Accounting; Director, Programs in Accounting*  
 Thomas Francis Courtless, Jr., A.M., *Assistant Professor of Criminology in the Graduate School of Public Law*  
 Paul Arthur Crafton, Ph.D., *Professor of Engineering and Applied Science*  
 Milton Crane, Ph.D., *Professor of English Literature*  
 Robert Emmet Cronin, M.S., *Associate Professor of Engineering and Applied Science*  
 Leon Richard Culbertson, B.S., M.D., *Clinical Professor of Urology*  
 Mary Elizabeth Cunningham, A.M., *Instructor in English Composition*  
 James Allen Curtin, A.B., M.D., *Associate Professor of Medicine*  
 Leon Cytryn, M.D., *Assistant Professor of Pediatric Psychiatry*  
 John Thomas Dailey, Ph.D., *Research Professor of Education*  
 John Tait Davis, Ph.D., *Associate Professor of Geography*  
 William Columbus Davis, Ph.D., *Professor of Latin American History*  
 †Clarke Davison, Ph.D., *Professor of Pharmacology*  
 James Forrester Davison, A.B., S.J.D., *Professor of Law*  
 Roderic Hollett Davison, Ph.D., *Professor of European History*  
 Vincent James DeAngelis, B.S. in P.E., A.M. in Ed., *Professor of Physical Education for Men*  
 Janet Marie Dearcopp, B.S. in Ed., *Instructor in Physical Education for Women*  
 Ronald Arthur Dearden, B.S. in P.E., A.M. in Ed., *Assistant Professor of Physical Education for Men*  
 Clyde Dease, M.S., *Instructor in Physics*  
 Robert Lyle Dedrick, Ph.D., *Associate Professor of Engineering and Applied Science*  
 Louis de Pian, Ph.D., *Professor of Applied Science*  
 Alton Harold Desmond, Ph.D., *Professor of Zoology*  
 Harry Grubb Detwiler, A.M., Ed.D., *Associate Professor of Education*  
 Robert Galloway Dixon, Jr., Ph.D., LL.B., *Professor of Law*

\* On leave of absence 1965-66.

† On sabbatical leave 1965-66.

- James Carlton Dockeray, Ph.D., *Professor of Finance; Assistant Dean (Programs in Government and Business) of the School of Government, Business, and International Affairs; Director of Programs, Industrial College of the Armed Forces*
- Donald Sterling Douglas, Ph.D., *Associate Professor of Zoology*
- Barbara Joan Dunham, A.M., *Instructor in English Composition*
- William Rankin Duryee, Ph.D., *Research Professor of Experimental Pathology*
- Roy Brandon Eastin, Ph.D., *Professor of Business Administration*
- Churchill Eisenhart, Ph.D., *Adjunct Professor of Applied Science*
- Robert Whittington Eller, B.S., Ed.D., *Associate Professor of Education; Assistant Dean (Special Projects) of the College of General Studies*
- Charles Elliott, Ph.D., *Assistant Professor of Political Science and International Affairs*
- Burton Seymour Epstein, A.B., M.D., *Assistant Professor of Anesthesiology*
- Richard Ferdinand Ericson, M.B.A., Ph.D., *Professor of Business Administration*
- Clayton Bernard Ethridge, M.D., *Professor of Medicine; Associate Dean of the School of Medicine; Medical Director, University Hospital; Director, Postgraduate Medical Education*
- John McCallum Evans, A.B., M.D., *Professor of Medicine*
- Theodore Myles Farber, Ph.D., *Assistant Research Professor of Pharmacology*
- Mohammad Fatemi, M.S., *Instructor in Physics*
- William Robert Felts, Jr., B.S., M.D., *Associate Professor of Medicine*
- Gerald Mervin Fenichel, A.B., M.D., *Instructor in Neurology*
- Elyce Zenoff Ferster, B.S., LL.B., *Associate Research Professor of Law in the Graduate School of Public Law*
- Nicolae Filipescu, Ph.D., *Assistant Professor of Chemistry*
- Lilien Filipovitch, A.M., *Instructor in Art*
- John Lincoln Finan, Ph.D., *Professor of Psychology*
- Beverly Fincher, Ph.D., *Assistant Professor of Chinese*
- Ben Sion Fine, M.D., *Assistant Professor of Ophthalmology*
- Edward Stitt Fleming, A.M., M.D., *Assistant Professor of Psychiatry*
- Richard Crosman Fowler, B.S., M.D., *Associate Professor of Medicine*
- \*Raymond Richard Fox, M.S. in C.E., *Associate Professor of Engineering and Applied Science*
- Monroe Henry Freedman, A.B., LL.M., *Associate Professor of Law*
- John Anthony Frey, Ph.D., *Associate Professor of Romance Languages*
- Helmuth Fuchs, Ph.D., *Visiting Associate Professor of Anthropology*
- Charles Edward Galbreath, Ph.D., *Professor of International Economics; Director, Programs for the War Colleges; Director, National War College Center and War College Program at the Pentagon*
- Michael Graham Gallagher, A.B. in Govt., LL.B., *Assistant Professor of Accounting*
- Patrick Francis Gallagher, Ph.D., *Associate Professor of Anthropology*
- Robert Norton Ganz, Ph.D., *Associate Professor of American Literature*
- Alexander Ramsey Gassaway, A.M., *Assistant Professor of Geography*
- Michael Gasster, Ph.D., *Associate Professor of History*
- Henry Irving Gates, M.F.A., *Instructor in Art*
- Lyndale Harpster George, B.S. in P.E., A.M. in Ed., A.P.C., *Associate Professor of Physical Education for Women*

\* On sabbatical leave 1965-66.



Frederick Harrell Gibbs, M.H.A., *Professor of Hospital Administration; Director, Programs in Health Care Administration*  
 Leon Gintzig, Ph.D., *Professor of Hospital Administration; Assistant Director, Programs in Health Care Administration*  
 Louis Harry Glassman, D.Sc., *Associate Professor of Engineering and Applied Science*  
 Ervin Alexander Gombos, A.B., M.D., *Associate Professor of Medicine*  
 Bernard Gordon, Ph.D., *Visiting Research Professor of Political Science*  
 Patrick Alan Gorman, M.B., B.Ch., B.A.O., D.C.H., *Assistant Professor of Medicine*  
 \*Wood Gray, Ph.D., *Professor of American History*  
 David Crittenden Green, A.B., LL.B., *Associate Professor of Law*  
 Harold Paul Green, A.B., J.D., *Professor of Law in the Graduate School of Public Law*  
 John Robert Greenya, A.B., *Instructor in English Composition*  
 Angus MacIvor Griffin, Ph.D., *Professor of Microbiology; Associate Dean of the School of Medicine*  
 Fuller Orville Griffith, B.S., *Instructor in Art (Graphics)*  
 William Byron Griffith, Ph.D., *Assistant Professor of Philosophy*  
 Nelson Thomas Grisamore, Ph.D., *Professor of Engineering and Applied Science; Assistant Dean (Research) of the School of Engineering and Applied Science*  
 Donald Gross, Ph.D., *Assistant Professor of Engineering and Applied Science*  
 Phillip Donald Grub, D.B.A., *Assistant Professor of Business Administration*  
 Dezider Gruenberger, Ph.D., *Visiting Assistant Research Professor of Pharmacology*  
 Leslie Arnold Guildner, Ph.D., *Adjunct Professor of Applied Science*  
 Harold Melton Hagen, A.B., M.D., *Instructor in Radiology*  
 Gerald Hahn, Ph.D., *Assistant Research Professor of Pharmacology*  
 Allan Hall, A.B., M.D., *Assistant Professor of Surgery*  
 Francis Newell Hamblin, A.B., Ed.D., LL.D., *Professor of Education; Dean of the School of Education*  
 Jackson Reid Hambrick, A.B., LL.B., *Professor of Law*  
 Gloria Mae Hammack, Ph.D., *Assistant Professor of Biology*  
 Lois Reel Hammer, Ph.D., *Assistant Professor of Psychology*  
 Raymond George Hanken, B.S. in P.E., A.M. in Ed., *Professor of Physical Education for Men*  
 Ira Bowers Hansen, Ph.D., *Professor of Zoology*  
 Kermit Henry Hanson, A.B., M.D., *Assistant Professor of Anesthesiology*  
 Forest Klaire Harris, Ph.D., *Adjunct Professor of Engineering*  
 Louis James Harris, A.B., S.J.D., *Professor of Law in the Graduate School of Public Law*  
 John May Harrison, M.S., *Assistant Professor of Physics*  
 Robert Hartley, M.B.A., *Assistant Professor of Business Administration*  
 Clarence Richard Hartman, A.B., M.D., *Associate Professor of Preventive Medicine and Community Health*  
 Quentin LeRoy Hartwig, Ph.D., *Associate Research Professor of Physiology*

\* On sabbatical leave fall semester 1965-66.

- Richard Catlin Haskett, Ph.D., *Professor of American History*  
 Robert Bernard Heller, Ph.D., *Professor of Engineering and Applied Science*  
 George Francis Henigan, Jr., Ph.M., *Professor of Speech; Director of Forensics*  
 Dagmar Renate Kirshner Henney, Ph.D., *Assistant Professor of Mathematics*  
 David Robert Henriquez, Capt., USAF, B.S. in B.A., *Assistant Professor of Aerospace Studies*  
 Frances Vlerebome Henry, Mus.B., Ph.D., *Associate Professor of Speech*  
 Charles Joseph Herber, A.M., *Associate Professor of European History*  
 Julia Elizabeth Hicks, A.M., *Instructor in Romance Languages*  
 Robert Sexton Higdon, B.S., M.D., *Professor of Dermatology; Director, University Clinics*  
 Philip Henry Highfill, Jr., Ph.D., *Professor of English Literature*  
 Peter Proal Hill, A.M., *Assistant Professor of History*  
 Harold Clendenin Hinton, Ph.D., *Associate Professor of International Affairs*  
 Herman Hedberg Hobbs, Ph.D., *Professor of Physics*  
 Thomas Willard Holland, LL.B., Ph.D., *Professor of Labor Economics*  
 Ariel Cahill Hollinshead, Ph.D., *Associate Research Professor of Medicine (Pharmacology)*  
 Mary Alida Holman, Ph.D., *Associate Research Professor of Economics*  
 \*Robert Honeygosky, A.M., *Assistant Professor of Speech*  
 Waring Carrington Hopkins, Ph.D., *Professor of International Affairs, Naval War College Center, Newport, Rhode Island*  
 Julian Hoptman, Ph.D., *Assistant Research Professor of Microbiology*  
 Richard Joseph Hornfeck, B.S., *Instructor in Physical Education for Men*  
 Gloria Lyon Horrworth, A.M., *Assistant Professor of Education*  
 William Allen Howard, A.B., M.D., *Clinical Professor of Pediatrics*  
 Tso-Liang Hsiao, Ph.D., *Visiting Research Professor of International Affairs*  
 Ching-Yao Hsieh, Ph.D., *Assistant Professor of Economics*  
 Rudolph Hugh, Ph.D., *Associate Professor of Microbiology*  
 Francis Joseph Hughes, B.S., *Instructor in Applied Science*  
 Wellington Hung, B.S., M.D., *Assistant Professor of Pediatrics*  
 Thelma Hunt, Ph.D., M.D., *Professor of Psychology*  
 Steven John Hunter, Ph.D., *Assistant Professor of Economics*  
 Patrick Ross Huntley, Ph.D., *Associate Professor of Business Economics*  
 Gérard Paul Huvé, A.B., *Assistant Professor of French*  
 Barry Ira Hyman, Ph.D., *Assistant Professor of Applied Science*  
 John Wingfield Jackson, B.S., LL.B., *Adjunct Professor of Law*  
 Cecil Bryant Jacobson, B.S., M.D., *Instructor in Obstetrics and Gynecology*  
 Marshall Hannis Jacobson, A.B., M.D., *Associate Professor of Medicine*  
 †Gilbert Chester Jacobus, B.S. in C.E., M.B.A., LL.B., *Professor of Public Administration*  
 Donald Richard Janis, A.M., *Instructor in English Composition*

\* On leave of absence 1965-66.

† On leave of absence fall semester 1965-66.

Frank Skiff Jannotta, A.B., M.D., *Assistant Professor of Pathology*  
 \*Herbert Jehle, Dr. Ing., *Professor of Physics*  
 James Lewis Jenkins, M.S. in E.E., *Associate Professor of Engineering and Applied Science*  
 Joe Lee Jessup, M.B.A., *Professor of Business Administration*  
 Daniel Palmer Johnson, Ph.D., *Adjunct Professor of Engineering*  
 Eva Mayne Johnson, Ph.D., *Associate Professor of Psychology*  
 Everett Herschel Johnson, Ph.D., *Professor of Statistics*  
 Thomas Nick Johnson, Ph.D., *Associate Professor of Anatomy*  
 Werner Jondorf, Ph.D., *Assistant Research Professor of Pharmacology*  
 Paul Bentley Jones, M.B.A., *Assistant Professor of Business Administration, Air University Center, Maxwell Air Force Base, Alabama*  
 Robert Gean Jones, B.D., Ph.D., *Professor of Religion*  
 †Robert Smith Jordan, Ph.D., D. Phil. (Oxon.), *Associate Professor of International Affairs*  
 Hans Elmer Kaiser, Ph.D., *Assistant Professor of Anatomy*  
 Paula Reines Kaiser, M.B., Ch.B., M.D., *Associate Professor of Anesthesiology*  
 Jacobus Martinus Kaper, Ph.D., *Associate Research Professor of Botany*  
 Norman Kaplan, Ph.D., *Visiting Professor of Sociology*  
 ‡John Kaye, M.S. in M.E., *Associate Professor of Engineering and Applied Science*  
 Elmer Louis Kayser, Ph.D., LL.D., *Professor of European History; University Historian*  
 Irving Kayton, A.B., LL.M., *Associate Professor of Law*  
 George Archibald Kelser, Jr., B.S., M.D., *Associate Professor of Medicine*  
 Peter Kenmore, M.D., *Assistant Professor of Orthopedic Surgery*  
 Robert Wayne Kenny, Ph.D., *Associate Professor of History*  
 Hewitt Kenyon, Ph.D., *Associate Professor of Mathematics*  
 Jackson Kelley Kern, M.B.A., *Instructor in Statistics*  
 Margaret Kiley, Ed.D., *Assistant Professor of Secretarial Studies; Director, Secretarial Studies Program in the College of General Studies*  
 Kwang Suh Kim, M.D., Ph.D., *Associate Research Professor of Pharmacology*  
 James Cecil King, Ph.D., *Professor of German; Assistant Dean in Columbian College of Arts and Sciences*  
 Virginia Randolph Kirkbride, A.M., Ed.D., *Associate Professor of Educational Psychology; Dean of Women*  
 William Wallace Kirkpatrick, A.B., LL.B., *Professor of Law; Assistant Dean of the Law School*  
 Arthur David Kirsch, Ph.D., *Associate Professor of Statistics*  
 Donald Chenoweth Kline, B.Arch., M.F.A., *Professor of Art*  
 Calvin Trexler Klopp, A.B., M.D., *Warwick Professor of Surgery (Cancer)*  
 Philip Klubes, Ph.D., *Assistant Research Professor of Pharmacology*  
 George Martin Koehl, A.M., *Professor of Physics; Associate Dean of Columbian College of Arts and Sciences*  
 Thomas Wayne Koontz, A.B., *Instructor in English*  
 Marlyn Korin, A.M., *Instructor in German*

\* On sabbatical leave 1965-66.

† On leave of absence 1965-66.

‡ On leave of absence spring semester 1965-66.



Norman Clifford Kramer, M.S., M.D., *Associate Professor of Medicine*  
 Robert Kramer, A.B., LL.B., *Professor of Law; Dean of the Law School*  
 Wolfgang Herbert Kraus, Dr.Jur., S.J.D., *Professor of Political Science*  
 Ruth Marilyn Krulfeld, A.B., *Assistant Professor of Anthropology*  
 Solomon Kullback, Ph.D., *Professor of Statistics*  
 Julian Kulski, B.Arch., *Professor of Urban Planning*  
 Frederick Charles Kurtz, M.B.A., C.P.A., *Associate Professor of Accounting*  
 Nicholas Kyriakopoulos, M.S. in Eng., *Instructor in Engineering*  
 Karen Lachowitch, A.M., *Instructor in English Composition*  
 John Francis Latimer, Ph.D., Litt.D., *Professor of Classical Languages and Literatures; Director, Foreign Student Affairs; University Marshal*  
 Thelma Lavine, Ph.D., *Professor of Philosophy*  
 Stuart Charles Law, A.B., LL.B., *Associate Professor of Law*  
 George Koo Lea, Ph.D., *Assistant Professor of Applied Science*  
 Berton Joe Leach, Ph.D., *Assistant Professor of Zoology*  
 Hugh Linus LeBlanc, Ph.D., *Professor of Political Science; Director, Programs in Public Affairs (including Economic Policy)*  
 \*Gust Angelo Ledakis, B.B.A., S.J.D., *Professor of Law*  
 Jhong Sam Lee, M.S.E., *Assistant Professor of Engineering*  
 Lubin Poe Leggette, A.M., Ed.D., *Depew Professor of Speech*  
 †Wolfram Karl Legner, Ph.D., *Professor of German*  
 Sanford Leon Leikin, M.D., *Assistant Professor of Pediatrics*  
 Laurence Pereira Leite, A.M., *Associate Professor of Art*  
 Gordon Sparks Letterman, A.B., B.S., in Med. Sc., M.D., *Professor of Surgery (Plastic Surgery)*  
 Jack Louis Levine, M.D., *Assistant Clinical Professor of Otolaryngology*  
 Bernard Isaac Levy, Ph.D., *Professor of Psychology; Director, Graduate Training in Clinical Psychology*  
 Joseph Benjamin Levy, Ph.D., *Professor of Chemistry*  
 Marie-Louise Levy, B.S., M.D., *Assistant Professor of Anesthesiology*  
 Edwin Lewis, M.B.A., *Professor of Accounting*  
 Ralph Kepler Lewis, A.M., *Assistant Professor of Anthropology*  
 Hubert Whitman Lilliefors, Ph.D., *Associate Professor of Statistics*  
 Calvin Darlington Linton, Ph.D., *Professor of English Literature; Dean of Columbian College of Arts and Sciences*  
 Gordon Leslie Lippitt, B.D., Ph.D., *Professor of Behavioral Sciences; Director, Center for Behavioral Sciences*  
 Thomas Phillip George Liverman, Ph.D., *Professor of Mathematics*  
 Kurt London, Ph.D., *Professor of International Affairs; Director, Institute for Sino-Soviet Studies*  
 William Long, A.M., *Assistant Professor of Economics*  
 Hortense Sarah Louckes, Ph.D., *Associate Research Professor of Physiology*  
 Reginald Spencer Lourie, B.S., M.D., Med. Sc.D., *Professor of Pediatric Psychiatry*  
 Robert Lowenstein, B.S.S., LL.B., *Professor of Law in the Graduate School of Public Law*

\* On leave of absence 1965-66.

† On sabbatical leave fall semester 1965-66.

- Hsiao Tung Lu, A.M., *Assistant Professor of Chinese*
- \*Howard Rowland Ludden, A.M., *Associate Professor of Political Science*
- William Allan MacDonald, Ph.D., *Professor of Art and Archaeology*
- William Thomas Mallison, Jr., A.B., LL.B., *Professor of Law*
- Harold George Mandel, Ph.D., *Professor of Pharmacology*
- Henry Girard Manne, A.B., LL.M., *Professor of Law*
- Allen Elias Marans, M.D., *Assistant Professor of Pediatrics*
- Robert Franklin Marler, Jr., B.S.E., A.M., *Instructor in English*
- William Laverne Marsh, B.S., M.D., *Associate Professor of Pathology*
- Antonio Luis Marti, *Instructor in Spanish*
- Kathleen Criddle Mason, A.B., B.F.A., *Instructor in Physical Education for Women*
- Martin Alexander Mason, Ing.-Dr., *Professor of Engineering and Applied Science; Dean of the School of Engineering and Applied Science*
- Rashid Massumi, M.D., *Associate Professor of Medicine*
- Louis Harkey Mayo, B.S., J.S.D., *Professor of Law; Dean of the Graduate School of Public Law*
- Paul Mazel, Ph.D., *Associate Professor of Pharmacology*
- Guido Ettore Mazzeo, Ph.D., *Associate Professor of Romance Languages*
- William Bernard McAvoy, A.B., M.D., *Assistant Professor of Radiology*
- George Edward McCandlish, Ph.D., *Associate Professor of American Literature*
- John Francis McCarthy, Jr., A.B., M.L., *Associate Professor of Business Administration*
- William Andrew McCauley, Ph.D., *Professor of Education*
- Muriel Hope McClanahan, Ph.D., *Associate Professor of English Composition*
- William Stanley McCune, A.B., M.D., *Clinical Professor of Surgery*
- Carl Oscar McDaniels, A.B., Ed.M., *Associate Professor of Education*
- James Kenneth McDonald, A.B., B.Litt. (Oxon.), *Assistant Professor of International Affairs; Director, Naval War College Center, Newport, Rhode Island*
- Frederick McElroy, A.M., *Instructor in Economics*
- James Jerry McFarland, Jr., B.S., M.D., *Associate Clinical Professor of Otolaryngology*
- Margaret McIntyre, B.S. in Ed., A.M., *Assistant Professor of Education*
- Alvin Greene McNish, M.S., *Adjunct Professor of Engineering*
- George Elbert McSpadden, Ph.D., *Professor of Romance Languages*
- John William McTigue, A.B., M.D., *Associate Professor of Ophthalmology; Associate University Physician*
- Florence Marie Mears, Ph.D., *Professor of Mathematics*
- \*Arnold Charles Meltzer, M.S. in Eng., *Assistant Professor of Engineering and Applied Science*
- Leroy Sorenson Merrifield, A.B., M.P.A., S.J.D., *Professor of Law*
- Howard Maxwell Merriman, Ph.D., *Professor of American Diplomatic History*
- Joseph Louis Metivier, Jr., A.M., *Associate Professor of Romance Languages; Assistant Dean in Columbian College of Arts and Sciences*

\* On leave of absence 1965-66.

- Franz Michael, Dr.Jur., *Professor of International Affairs; Associate Director, Institute for Sino-Soviet Studies*
- Lawrence Michaels, A.B., M.D., *Instructor in Surgery*
- Arthur Selwyn Miller, A.B., J.S.D., *Professor of Law*
- Frank Nelson Miller, Jr., B.S., M.D., *Professor of Pathology*
- Frederick Louis Minn, Ph.D., *Assistant Professor of Chemistry*
- Joseph Monane, Ph.D., *Associate Professor of Sociology*
- Clarence Cowan Mondale, Ph.D., *Associate Professor of American Literature*
- Margaret Wheeler Montzka, A.M., *Assistant Professor of Physics*
- \*Robert Hamilton Moore, Ph.D., *Professor of English Composition*
- John Andrew Morgan, Jr., Ph.D., *Assistant Professor of Political Science*
- Edith Elizabeth Mortensen, Ph.D., *Professor of Zoology*
- James Norman Mosél, A.M., *Professor of Psychology*
- Margaret Harrison Moss, A.M., *Instructor in Special Education*
- Sam Clark Munson, Ph.D., *Professor of Biology*
- Albert Christian Murdaugh, M.S., in Met.E., *Associate Professor of Engineering*
- Cornelius Francis Murphy, B.S., M.D., *Associate Professor of Radiology*
- William Henry Myers, A.B., A.M. in Ed., *Professor of Physical Education for Men*
- Leonard Nadler, B.B.A., M.S., Ed.D., *Associate Professor of Education*
- Charles Rudolph Naeser, Ph.D., *Professor of Chemistry*
- Ralph Clarke Nash, Jr., A.B., J.D., *Professor of Law; Director, Government Contracts Program*
- John Peter Nasou, A.B., M.D., *Associate Professor of Medicine*
- Edmund Sigurd Nasset, Ph.D., *Visiting Professor of Physiology*
- Anthony Nassner, Tech.Sgt., USAF, *Instructor in Aerospace Studies*
- Nels David Nelson, Ph.D., *Professor of Mathematics*
- Warren James Nelson, B.S., M.D., *Assistant Professor of Radiology*
- William Newman, A.B., M.D., *Professor of Pathology*
- Clinton Andrew Neyman, Jr., A.M., *Assistant Research Professor of Education*
- Elizabeth Sutherland Neyman, A.M., *Assistant Professor of Spanish*
- Benjamin Nimer, Ph.D., *Professor of Political Science*
- Charles Bernard Nutting, A.B., S.J.D., LL.D., Litt.D., L.H.D., *Professor of Law; Administrator, National Law Center*
- Beatrice O'Donnell, A.B., *Instructor in English Composition*
- † Morris Solomon Ojalvo, Ph.D., *Professor of Engineering and Applied Science*
- George Andrew Olkhovsky, A.M., *Assistant Professor of Russian*
- Willard Overgaard, A.M., *Assistant Professor of International Affairs, Air University Center, Maxwell Air Force Base, Alabama*
- Harry Robert Page, M.B.A., *Assistant Professor of Business Administration; Director, Program in Business Administration; Acting Director, Program in Public Administration*
- Chei-Min Paik, D.B.A., *Assistant Professor of Accounting*
- Richmond Shepard Paine, A.B., M.D., *Professor of Pediatric Neurology*
- Robert Eugene Park, B.S., A.B., LL.B., *Associate Professor of Law*

\* On sabbatical leave spring semester 1965-66.

† On sabbatical leave 1965-66.



Joanne Bouthilet Parker, A.B., A.M., in Ed., *Assistant Professor of Education; Assistant Director, Reading Center*  
 Kittie Fenley Parker, Ph.D., *Associate Professor of Botany*  
 John Parks, M.S., M.D., *Professor of Obstetrics and Gynecology; Dean of the School of Medicine*  
 Robert Carleton Parlett, Ph.D., M.D., *Professor of Microbiology*  
 Robert Parris, M.S. in Mus.Ed., B.S. in Mus.Comp., *Assistant Professor of Music*  
 Alvin Edward Parrish, M.D., *Professor of Medicine; Associate Dean of the School of Medicine*  
 Helen Glick Percy, A.B., M.S. in S.W., *Assistant Professor of Psychiatry (Social Work)*  
 Frederick Allen Peck, B.S., M.D., *Assistant Professor of Medicine*  
 Thomas Martin Peery, A.B., M.D., *Professor of Pathology*  
 Theodore Peter Perros, Ph.D., *Professor of Chemistry*  
 Arthur Peschin, B.S., M.D., *Assistant Professor of Anesthesiology*  
 Henry Peskin, A.M., *Assistant Professor of Economics*  
 Vladimir Petrov, Ph.D., *Associate Professor of International Affairs*  
 Calvin Weir Pettit, Ph.D., *Professor of Speech; Director, Speech Clinic*  
 Vaclav Pfeffer, M.S., *Assistant Professor of Mathematics*  
 Carl Herman Pfuntner, A.M., *Assistant Professor of Philosophy*  
 Ewing Lakin Phillips, Ph.D., *Professor of Psychology; Director, Psychological Clinic*  
 Jack Warren Pierce, Ph.D., *Adjunct Professor of Geology*  
 Howard Clemeth Pierpont, A.B., M.D., C.M., *Associate Professor of Surgery*  
 Lois Irene Platt, A.B., M.D., *Assistant Professor of Pathology (Cytology)*  
 Lucian Brewster Platt, Ph.D., *Associate Professor of Geology*  
 Judith Ann Abrams Plotz, Ph.D., *Assistant Professor of English*  
 Max Pock, S.J.D., *Associate Professor of Law*  
 Nadine Nadeshda Popluiko, Ph.D., *Assistant Professor of Russian*  
 Edward Andrew Potts, A.B., LL.B., *Associate Professor of Law; Assistant Dean of the Law School*  
 Francisco Prats, Ph.D., *Assistant Professor of Physics*  
 Robert William Prouty, M.S., *Instructor in Special Education*  
 Ralph Elliott Purcell, Ph.D., *Professor of Political Science*  
 Jon Alik Quitslund, A.B., *Assistant Professor of English*  
 George Rabchevsky, M.S., *Instructor in Geology*  
 Jerome Mark Raffel, M.S. in E.E., *Assistant Professor of Engineering*  
 Robert Wallace Rafuse, Jr., Ph.D., *Assistant Professor of Economics*  
 Joseph Eugene Rankin, B.S., M.D., *Associate Professor of Psychiatry*  
 Martha Norman Rashid, Ph.D., *Associate Professor of Education*  
 Charles Bass Reed, B.S. in P.E., A.M. in Ed., *Instructor in Physical Education for Men*  
 John Palmer Reesing, Jr., Ph.D., *Professor of English Literature*  
 Bernard Reich, A.M., *Assistant Professor of Political Science*  
 Melvin Reich, Ph.D., *Assistant Professor of Microbiology*  
 Peter Tone Ridley, Ph.D., *Assistant Professor of Physiology*  
 Robert Meldrum Riggs, A.M., *Assistant Professor of French*  
 John Rizzo, Ph.D., *Assistant Professor of Behavioral Sciences*  
 James Willis Robb, Ph.D., *Associate Professor of Romance Languages*  
 Mary Louise Robbins, Ph.D., *Professor of Microbiology*  
 David Robinson, Jr., A.B., LL.B., *Associate Professor of Law*

Prentiss Noble Robinson, Ph.D., *Assistant Professor of Engineering*  
 Felicia Inez Rochon, M.S., *Assistant Professor of Physical Education for Women*  
 James Rudolph Roman, Jr., M.B.A., *Instructor in Business Administration*  
 Monroe James Romansky, A.B., M.D., *Professor of Medicine*  
 Blake Smith Root, A.M., Ed.D., *Professor of Education; Assistant Dean of the School of Education*  
 S. McKee Rosen, Ph.D., *Visiting Professor of Public Administration*  
 Addison May Rothrock, Sc.D., *Professor of Applied Science*  
 Jesse Gallant Rubin, B.S., M.D., *Assistant Professor of Psychiatry*  
 Patricia Holly Russell, M.D., *Assistant Professor of Anesthesiology*  
 \*Robert Clinton Rutledge, A.M., *Assistant Professor of English*  
 Howard Morley Sachar, Ph.D., *Associate Professor of History*  
 Paul Sadagursky, M.S., *Assistant Professor of Mathematics*  
 Joseph Francis Sadusk, Jr., A.B., M.D., *Professor of Preventive Medicine and Community Health*  
 Carol Ruth St. Cyr, Ph.D., *Professor of Education*  
 Minoru Sakaguchi, Ph.D., *Visiting Professor of Statistics*  
 Keith Russell Sanders, M.S., *Assistant Professor of Speech*  
 Victoria Kochurova Sandor, M.S., *Assistant Professor of Slavic Languages and Literatures*  
 Clyde Bailey Sargent, Ph.D., *Visiting Professor of International Affairs, Naval War College Center, Newport, Rhode Island*  
 Peter Hans Sawitz, M.S. in E.E., *Associate Professor of Applied Science*  
 Louis Charles Schaefer, A.M., *Assistant Professor of English*  
 Geza Schay, Ph.D., *Associate Professor of Mathematics*  
 Stefan Otto Schiff, Ph.D., *Assistant Professor of Zoology*  
 Lewis Aaron Schiller, LL.B., A.M., *Associate Professor of Law*  
 Richard Harold Schlagel, Ph.D., *Associate Professor of Philosophy*  
 Lawrence Erwin Schlesinger, Ph.D., *Associate Research Professor of Psychology*  
 William Edward Schmidt, Ph.D., *Professor of Chemistry*  
 Wilson Emerson Schmidt, Ph.D., *Professor of Economics*  
 Arlo Allen Schultz, B.S., *Instructor in Russian*  
 Lois Katherine Greene Schwoerer, Ph.D., *Assistant Professor of History*  
 Lewis Pennington Scott III, M.D., *Associate Professor of Pediatrics*  
 Robert Curtis Sedwick, M.E.A., D.B.A., *Associate Professor of Business Administration; Director, The George Washington University Center (Tidewater Area), Fort Monroe, Virginia*  
 David Earl Seidelson, A.B., LL.B., *Associate Professor of Law; Faculty Adviser, The George Washington Law Review*  
 Robert Poindexter Sharkey, Ph.D., *Professor of Economic History*  
 David James Sharpe, A.B., LL.B., *Associate Professor of Law*  
 Ernest Sewall Shepard, A.M., *Professor of English Literature*  
 Paul Edgar Shorb, Jr., A.B., M.D., *Assistant Professor of Surgery*  
 Frederic Siegel, Ph.D., *Associate Professor of Geochemistry*  
 David Elliot Silber, A.M., *Assistant Professor of Psychology*  
 Artemis Pinkerson Simopoulos, M.D., *Assistant Professor of Pediatrics*

\* On leave of absence fall semester 1965-66.



- James Glover Sites, M.D., *Associate Professor of Obstetrics and Gynecology*
- Irene I-Lien Hsu Siu, B.S., M.D., *Associate Professor of Medicine*
- Joseph Richard Sizoo, A.M., D.D., Litt.D., LL.D., L.H.D., S.T.D., *Milbank Professor of Religion; Director, University Chapel*
- Michael Richard Skigen, M.B.A., *Assistant Professor of Accounting*
- Clarence Clell Smarr, Staff Sgt., USAF, *Instructor in Aerospace Studies*
- Benjamin Williams Smith, Ph.D., *Associate Professor of Biochemistry*
- Herbert Ernest Smith, Ph.D., *Professor of Engineering and Applied Science; Assistant Dean (Academic) of the School of Engineering and Applied Science*
- Lowell Cyrus Smith, M.B.A., *Assistant Professor of Business and Public Administration, Air University Center, Maxwell Air Force Base, Alabama*
- Nan Byrd Smith, B.S., *Instructor in Physical Education for Women*
- William Arthur Smith, A.M., *Associate Professor of Mathematics*
- Nicholas Patrick Dillon Smyth, M.S., M.B., Ch.B., *Assistant Professor of Surgery*
- Jeanne Ellen Snodgrass, A.B., M.S., in P.E., *Associate Professor of Physical Education for Women*
- \*Waldo Sommers, Ph.D., *Professor of Public Administration*
- Gunther Urban Sorger, Dr. Ing., *Adjunct Professor of Engineering*
- Emilio Vicente Soto, B.S., M.D., M.Med.Sc., *Assistant Professor of Pediatrics*
- Loretta May Stallings, A.M., *Professor of Physical Education for Women; Director of Women's Athletics*
- †George Stambuk, Ph.D., *Associate Professor of International Affairs. Naval War College Center, Newport, Rhode Island*
- William Woodrow Stanbro, M.D., *Professor of Radiology*
- James Edward Starrs, A.B., LL.M., *Associate Professor of Law*
- Carl Steiner, A.M., *Assistant Professor of German*
- George Steiner, B.S., Mus.M., *Associate Professor of Music; Director of Orchestra*
- Richard Walton Stephens, Ph.D., *Professor of Sociology*
- Elizabeth Weiss Stephenson, Ph.D., *Assistant Professor of Physiology*
- Edwin Lockwood Stevens, A.M., *Professor of Speech*
- Harold Stevens, Ph.D., M.D., *Professor of Neurology*
- Russell Bradford Stevens, Ph.D., *Professor of Botany*
- Charles Todd Stewart, Jr., Ph.D., *Professor of Economics*
- Richard Engle Stockton, Ph.D., *Assistant Professor of English*
- Hiram Miller Stout, Ph.D., *Professor of International Affairs; Assistant Dean (Programs in International Affairs) of the School of Government, Business, and International Affairs*
- James Ashley Straw, Ph.D., *Assistant Professor of Pharmacology*
- Karl Ernest Stromsem, Ph.D., *Professor of Public Administration; Director, Navy Graduate Financial Management Program*
- James Whitley Suber, A.M., Ed.D., *Associate Professor of Education*
- Rafael Supervía, Doctor en derecho, *Professor of Spanish*
- Roland Henry Tanck, Ph.D., *Assistant Research Professor of Psychology; Counselor, Psychological Clinic*
- Frank Robert Tangherlini, Ph.D., *Associate Professor of Physics*
- Vito Tanzi, A.M., *Assistant Professor of Economics*

\* On sabbatical leave 1965-66.

† On leave of absence 1965-66.



Mildred Tate, B.S., M.S.S., *Assistant Professor of Pediatrics (Psychiatric Social Work)*

William Lonsdale Tayler, Ph.D., *Professor of International Affairs; Director, Army War College Center, Carlisle Barracks, Pennsylvania*

Geza Teleki, Ph.D., *Professor of Geology*

Ira Rockwood Telford, Ph.D., *Professor of Anatomy*

Douglas Harold Teller, M.F.A., *Assistant Professor of Art*

Klaus Thoenelt, Ph.D., *Associate Professor of German*

Raymond Edward Thomas, A.M., *Assistant Professor of Statistics; Director, Computer Center*

Ronald Bettes Thompson, Ph.D., *Professor of European History*

Howard Erwin Ticktin, A.B., M.D., *Associate Professor of Medicine*

Charles Stanley Tidball, Ph.D., M.D., *Fry Professor of Physiology*

Elizabeth Tidball, Ph.D., *Associate Research Professor of Physiology*

Teoktistos George Toridis, Ph.D., *Assistant Professor of Engineering*

Anastasios Johannes Tousimis, Ph.D., *Associate Research Professor of Physical Biology*

Kathryn Mildred Towne, A.M., *Professor of Home Economics*

Carleton Raymond Treadwell, Ph.D., *Professor of Biochemistry*

Clarke Freeman Trundle, Ed.D., *Assistant Research Professor of Education*

Neofytos Theodore Tsangaris, B.S., M.D., *Assistant Professor of Surgery*

\*William Lewis Turner, Ph.D., *Associate Professor of English; Assistant Dean in Columbian College of Arts and Sciences*

Curtis Edward Tuthill, Ph.D., *Associate Professor of Psychology*

Cecilia Nogura Uribe, A.B., *Instructor in Spanish*

George Vartkes Vahouny, Ph.D., *Associate Professor of Biochemistry*

Merle Glenn Van Dyke, Ph.D., *Assistant Professor of Education*

Benjamin Douglass Van Evera, Ph.D., Sc.D., *Professor of Chemistry; Dean for Sponsored Research*

Samuel Van Valkenburg, Ph.D., *Visiting Professor of Geography*

William Howard Venable, Jr., Ph.D., *Assistant Professor of Physics*

Louis André Vigneras, Ph.D., *Professor of Romance Languages*

Robert Corbin Vincent, Ph.D., *Professor of Chemistry*

†Richard David Walk, Ph.D., *Professor of Psychology*

Herman Walker, Jr., Ph.D., *Professor of International Affairs; Army War College Center, Carlisle Barracks, Pennsylvania*

‡Robert Harris Walker, Jr., Ph.D., *Professor of American Civilization*

Dewey Wallace, Jr., B.D., A.M., *Assistant Professor of Religion*

Joseph Hart Walters, Jr., Ph.D., *Associate Professor of Business Administration*

Carl Hugo Walther, M.C.E., *Professor of Engineering and Applied Science*

George Ching Yuan Wang, M.S., *Assistant Professor of Chinese*

Donald Stevenson Watson, Ph.D., *Professor of Economics*

John Watt, Jr., M.D., *Associate Professor of Physical Medicine and Rehabilitation*

Mary Falorsi Watt, M.D., *Associate Professor of Medicine*

James Winston Watts, B.S., M.D., *Professor of Neurological Surgery*

Benny Waxman, M.D., *Assistant Professor of Obstetrics and Gynecology*

\* On sabbatical leave spring semester 1965-66.

† On sabbatical leave fall semester 1965-66.

‡ On sabbatical leave 1965-66.

David Benson Weaver, A.B., LL.B., *Professor of Law*  
 Robert Louis Weintraub, Ph.D., *Professor of Botany*  
 Paul Stephen Weisberg, A.B., M.D., *Assistant Professor of Psychiatry*  
 William Weiss, M.D., *Assistant Professor of Pharmacology*  
 Helene Gilliaert Werner, A.B., M.D., *Assistant Professor of Anesthesiology*  
 Stuart Rudolph Westerlund, A.M., Ed.D., *Associate Professor of Education*  
 Glen Earl Weston, B.S., LL.B., *Professor of Law*  
 David Gover White, B.Chem.Eng., Ph.D., *Professor of Chemistry*  
 Ralph Kirby White, Ph.D., *Professor of Social Psychology*  
 William Whitmore, Jr., M.D., *Assistant Professor of Medicine*  
 Norman Arthur Wiegmann, Ph.D., *Professor of Mathematics*  
 Robert Lee Williams, A.M., Ed.D., *Assistant Professor of Education*;  
*Acting Assistant Dean of the Division of University Students*  
 Robert Crumpton Willson, A.B., *Associate Professor of Journalism*  
 Karl Wipplinger, M.D., *Instructor in Medicine*  
 Charles Samuel Wise, B.S., M.D., *Professor of Physical Medicine and Rehabilitation*  
 Maida Rust Withers, M.S., *Assistant Professor of Physical Education for Women*  
 Frederick William Wolff, M.S., M.D., *Professor of Medicine*  
 Wai Tuen Wong, M.D., *Instructor in Anesthesiology*  
 \*Reuben Esselstyn Wood, Ph.D., *Professor of Chemistry*  
 James Carter Wootton, M.S. in Aero. Eng., *Associate Professor of Engineering*  
 Samuel Nathaniel Wrenn, Ph.D., *Professor of Chemistry*  
 †Elizabeth Truman Wright, A.M., *Associate Professor of English Composition*; *Assistant Dean of the Division of University Students*  
 Helen Bates Yakobson, B.S., *Associate Professor of Russian*  
 Stephen Safford Yeandle, Jr., Ph.D., *Assistant Professor of Physics*  
 Harry Elwood Yeide, Jr., A.B., B.D., *Assistant Professor of Religion*  
 Leon Yochelson, A.B., M.D., *Professor of Psychiatry*  
 Samuel Yochelson, Ph.D., M.D., *Research Professor of Psychiatry*  
 William John Youden, Ph.D., *Professor of Applied Science*  
 Theodore Richard Young, B.S., *Adjunct Professor of Engineering*  
 Artley Joseph Zuchelli, Ph.D., *Associate Professor of Physics*

\* On sabbatical leave spring semester 1965-66.

† On sabbatical leave fall semester 1965-66.

## RESEARCH PROGRAMS

### CENTER FOR MEASUREMENT SCIENCE

THE CENTER, under the direction of the School of Engineering and Applied Science, is a cooperative activity of the University, industry, and government providing education, research, and service programs related to measurement.

The research program of the Center includes all aspects of research and development related to measurement science. Research and/or development may be undertaken as independent studies by staff members for the Center, as studies for a sponsor under contract, or by personnel of Associates of the Center assigned to the Center to undertake the specific work. Associates receive publications of the Center; certain publications may be restricted in distribution.

At present, part of the activities of the Center are supported by contracts with the National Aeronautics and Space Administration and the Office of Naval Research.

### PATENT, TRADEMARK, AND COPYRIGHT RESEARCH INSTITUTE

The Patent, Trademark, and Copyright Research Institute is engaged in gathering and disseminating knowledge regarding the principles, facts, and practical operations of the patent, trademark, copyright, and related systems of laws of the United States and other countries.

Louis James Harris, A.B., LL.B., S.J.D., LL.M., *Executive Director*

### SPONSORED RESEARCH

Benjamin Douglass Van Evera, Ph.D., Sc.D., *Dean for Sponsored Research*

The Research Programs listed in this section are special programs which are set up for the specific purpose of attacking in an academic atmosphere problems submitted by the sponsoring agency. Cooperation between these programs and the various departments of instruction is as close as the nature and needs of the programs and departments will permit.

### BIOLOGICAL SCIENCES COMMUNICATION PROJECT

The primary aim of the project is to study and facilitate the flow of information from the producer of life science information to the ultimate consumer. Studies associated with the nature and control



of the literature in the life sciences are undertaken as well as investigations of the communication practices of the individuals involved. Associated with this primary aim are educational, service, and consultative activities.

The major portion of work accomplished by this project is Agency supported. Completed research is reported in *Communique*.

Charles W. Shilling, M.D., *Clinical Instructor in Medicine*

Josiah W. Tyson, M.S., *Assistant Director*

Mildred C. Benton, A.B., *Senior Staff Scientist*

#### BIOMETRIC LABORATORY

The Biometric Laboratory applies mathematical techniques to biological problems related to mental health. It was established under a contract with the National Institutes of Health. The laboratory assists investigators throughout the United States in planning research and in analyzing data. The majority of these research projects concern the effects of drugs on behavior.

Roland R. Bonato, Ph.D., *Director; Assistant Research Professor of Psychology*

Nils B. Mattson, LL.M., *Senior Scientist*

Belur K. Radhakrishnan, M.S. in Ind. E., *Senior Scientist*

Robert F. Prien, Ph.D., *Senior Scientist*

Charles E. Rice, Ph.D., *Senior Scientist*

Frances F. Fleming, M.N., *Research Scientist*

Deborah Katz, A.M., *Research Scientist*

Samuel Trychin, Jr., A.M., *Research Scientist*

Kenneth Chi-Kun Yang, A.B., *Research Scientist*

#### COMPUTER PROGRAMS RESEARCH PROJECT

The purpose of the Computer Programs Research Project is to develop general purpose computer programs for the Division of Research Grants of the National Institutes of Health. The current activities of the project include analysis of data gathering and data processing activities, examination of numerous specific problems for common elements that can be resolved by a single generalized computer program, and developing and testing these programs on the Honeywell 800 computer. In the near future, research efforts will be oriented toward producing limited information retrieval systems.

Richard S. Engburg, Ph.D., *Principal Investigator*

Joseph D. Doldan, *Senior Scientist*

David Doman, B.S. in E.E., *Senior Scientist*

Margaret W. Pratt, A.B., *Senior Scientist*

Peter M. Burtram, *Research Scientist*

William C. Ferguson, *Research Scientist*

#### DRIVER BEHAVIOR RESEARCH PROJECT

The Driver Behavior Research Project was established through a grant awarded to the Department of Psychology by the Accident Prevention Division of the Department of Health, Education, and Welfare to develop driver training and rehabilitation procedures for increasing automobile safety. The project is investigating the use of

programmed learning, group discussion, and mass communication in driver education.

Lawrence E. Schlesinger, Ph.D., *Director; Associate Research Professor of Psychology*

Richard Myrick, Ph.D., *Senior Scientist*

#### EDUCATION RESEARCH PROJECT

The Education Research Project is engaged in basic and applied research in all aspects of education. Working with the School of Education, it provides for faculty and graduate students an opportunity for more direct and active participation in the continuous evaluation and renewal of the American education systems and processes. The work of this project is carried out under contracts and grants from the U.S. Office of Education and other private and governmental agencies.

John T. Dailey, Ph.D., *Director; Research Professor of Education*

Clinton A. Neyman, Jr., A.M., *Assistant Director; Assistant Research Professor of Education*

James R. Hill, A.M., *Senior Scientist*

#### HUMAN RESOURCES RESEARCH OFFICE

The Human Resources Research Office was established by means of a contract between the Department of the Army and The George Washington University to carry out an integrated Army program of human resources research. The work is conducted mainly in the fields of training methods and motivation, morale, and leadership. Two research divisions and supporting services including a statistical office are located at Alexandria, Virginia. Five research divisions work under the command of Headquarters, Continental Army Command, and the technical supervision of the Alexandria Office. At present they are situated at Fort Knox, Kentucky; Presidio of Monterey, California; Fort Benning, Georgia; Fort Bliss, Texas; and Fort Rucker, Alabama.

#### OFFICE OF THE DIRECTOR

Meredith P. Crawford, Ph.D., *Director*

William A. McClelland, Ph.D., *Associate Director*

Preston S. Abbott, Ph.D., *Assistant Director for Review and Analysis*

Eugene A. Cogan, Ph.D., *Assistant Director for Reporting*

Carl J. Lange, Ph.D., *Assistant Director for Planning*

John E. Taylor, Ph.D., *Assistant Director for Operations*

Charles W. Smith, LL.B., *Business Administrator*

Robert G. Smith, Jr., Ph.D., *Director's Representative at USCONARC*

Saul Lavisky, A.M., *Senior Scientist*

Lola M. Zook, A.B., *Senior Scientist*

#### DIVISION NO. 1 (SYSTEM OPERATIONS), ALEXANDRIA, VIRGINIA

J. Daniel Lyons, Ph.D., *Director of Research*

Edgar L. Shriver, Ph.D., *Senior Staff Scientist*

C. Dennis Fink, Ph.D., *Senior Scientist*

Eugene A. MacCaslin, Ph.D., *Senior Scientist*

A. James McKnight, Ph.D., *Senior Scientist*

Robert J. Seidel, Ph.D., *Senior Scientist*  
Richard Behringer, A.M., *Research Scientist*  
Patrick J. Butler, A.M., *Research Scientist*  
Harold G. Hunter, Ph.D., *Research Scientist*  
Herbert B. Leedy, Ph.D., *Research Scientist*  
Donald Reynolds, Ph.D., *Research Scientist*  
Harold Wagner, A.B., *Research Scientist*

DIVISION NO. 2 (ARMOR), FORT KNOX, KENTUCKY

Norman Willard, Jr., Ph.D., *Director of Research*  
Robert A. Baker, Jr., Ph.D., *Senior Staff Scientist*  
Donald F. Haggard, Jr., Ph.D., *Senior Staff Scientist*  
L. Dennis Cannon, Ph.D., *Senior Scientist*  
David L. Easley, Ph.D., *Senior Scientist*  
Elmo E. Miller, Ph.D., *Senior Scientist*  
Shepard G. Schwartz, A.B., *Senior Scientist*  
Richard W. Sheldon, Ph.D., *Research Scientist*

DIVISION NO. 3 (RECRUIT TRAINING), PRESIDIO OF MONTEREY,  
CALIFORNIA

Howard H. McFann, Ph.D., *Director of Research*  
Hilton M. Bialek, Ph.D., *Senior Staff Scientist*  
S. James Goffard, Ph.D., *Senior Staff Scientist*  
Paul D. Hood, Ph.D., *Senior Staff Scientist*  
Robert Vineberg, Ph.D., *Senior Staff Scientist*  
John S. Caylor, Ph.D., *Senior Scientist*  
Richard P. Kern, Ph.D., *Senior Scientist*  
Ernest K. Montague, Ph.D., *Senior Scientist*  
Morris Showel, Ph.D., *Senior Scientist*  
Joseph S. Ward, Ph.D., *Senior Scientist*  
Harry A. Burdick, Ph.D., *Research Scientist*  
Robert D. MacDonald, Ph.D., *Research Scientist*

DIVISION NO. 4 (INFANTRY), FORT BENNING, GEORGIA

T. Owen Jacobs, Ph.D., *Director of Research*  
Ronald L. Brown, Ph.D., *Senior Scientist*  
Clay F. George, Ph.D., *Senior Scientist*  
Joseph A. Olmstead, Jr., Ph.D., *Senior Scientist*  
Arthur J. DeLuca, Ed.M., *Research Scientist*  
William F. Fox, Ph.D., *Research Scientist*  
Theodore R. Powers, A.M., *Research Scientist*

DIVISION NO. 5 (AIR DEFENSE), FORT BLISS, TEXAS

Robert D. Baldwin, Ph.D., *Director of Research*  
Joseph F. Follettie, Ph.D., *Senior Staff Scientist*  
Harry L. Ammerman, Ph.D., *Senior Scientist*  
John A. Cox, Ph.D., *Senior Scientist*  
Albert L. Kubala, Ph.D., *Senior Scientist*  
William H. Melching, Ph.D., *Senior Scientist*  
James P. Rogers, Ph.D., *Senior Scientist*  
Paul G. Whitmore, Jr., Ph.D., *Senior Scientist*



A. Dean Wright, M.S., *Senior Scientist*  
Julia S. Harris, B.S.C., *Research Scientist*  
Frank B. Nelson, Ph.D., *Research Scientist*

**DIVISION NO. 6 (AVIATION), FORT RUCKER, ALABAMA**

Wallace W. Prophet, Ph.D., *Director of Research*  
Francis H. Thomas, Ph.D., *Senior Staff Scientist*  
Paul W. Caro, Jr., Ph.D., *Senior Scientist*  
Robert H. Wright, Ph.D., *Senior Scientist*  
Wiley R. Boyles, Ph.D., *Research Scientist*  
Peter B. Dawkins, Ph.D., *Research Scientist*  
T. Harrison Gray, Ph.D., *Research Scientist*

**DIVISION NO. 7 (LANGUAGE AND AREA TRAINING), ALEXANDRIA, VIRGINIA**

Arthur J. Hoehn, Ph.D., *Director of Research*  
Jose Armilla, Ph.D., *Senior Staff Scientist*  
Alfred J. Kraemer, Ph.D., *Senior Staff Scientist*  
George H. Brown, Ph.D., *Senior Scientist*  
Alfred I. Fiks, Ph.D., *Senior Scientist*  
Edgar M. Haverland, Ph.D., *Senior Scientist*  
Arthur H. Niehoff, Ph.D., *Senior Scientist*  
Eugene H. Rocklyn, Ph.D., *Senior Scientist*  
Edward C. Stewart, Ph.D., *Senior Scientist*  
Jack Danielian, Ph.D., *Research Scientist*  
Jerry M. Fleming, Ph.D., *Research Scientist*  
Robert J. Foster, Ph.D., *Research Scientist*  
Dean K. Froehlich, Ph.D., *Research Scientist*  
Malcolm S. Klores, Ph.D., *Research Scientist*  
John W. McCrary, Jr., Ph.D., *Research Scientist*  
William E. Montague, A.M., *Research Scientist*  
Ali A. Paydarfar, Ph.D., *Research Scientist*  
Harley M. Upchurch, Ph.D., *Research Scientist*

**INFORMATION SCIENCES PROJECT**

The Information Sciences Project does work in the field of information retrieval. This project operates under a contract with the Department of Defense.

Thomas B. Wiggins, M.S. in Eng., *Principal Investigator; Assistant Professorial Lecturer in Engineering*  
Donald O. Baechler, M.S. in Eng., *Senior Scientist; Instructor (part-time) in Engineering*  
Nicholas A. Sloan, B.S., *Senior Scientist; Assistant Professorial Lecturer in Applied Science*

**LOGISTICS RESEARCH PROJECT**

The purpose of the Logistics Research Project is to study logistics problems in all their aspects, to develop more efficient and expeditious methods of solving logistics problems, and to apply advanced data processing techniques to the solution of these problems. A large scale

data processing facility is based upon an IBM 7080 computer. This project is operated under contracts with the Department of the Navy.

W. H. Marlow, Ph.D., *Principal Investigator; Professorial Lecturer in Mathematics*

Joseph P. Fennell, A.M., *Deputy Principal Investigator; Associate Professorial Lecturer in Engineering*

Henry Solomon, Ph.D., *Deputy Principal Investigator; Associate Professorial Lecturer in Economics*

Sheldon E. Haber, Ph.D., *Senior Staff Scientist; Assistant Professorial Lecturer in Economics*

Erling F. Rosholdt, M.E.A., *Senior Staff Scientist*

Irwin S. Tolins, Ph.D., *Senior Staff Scientist*

Ross E. Tomlinson, A.M., *Senior Staff Scientist*

James E. Hamilton, M.S., *Senior Scientist*

Peter J. Kalman, Ph.D., *Senior Scientist*

Raymond W. Lewis, A.B., *Senior Scientist*

Frank W. Segel, M.B.A., *Senior Scientist*

Arthur J. Ziffer, M.S., *Senior Scientist*

William R. Bailey, A.M., *Research Scientist*

Dale M. Heien, A.M., *Research Scientist*

George M. Lady, A.M., *Research Scientist*

John G. O'Hara, B.S., *Research Scientist*

George W. Saxton, B.S., *Research Scientist*

#### MENTAL COMPETENCY STUDY

The Mental Competency Study is investigating the operation of the law governing persons who, because of mental illness, are not competent to manage their affairs and need to have a guardian appointed. It will survey all noncriminal aspects of the subject. Investigations of actual practices are being conducted in selected communities throughout the United States. It is contemplated that the study will lead to recommendations for improvements.

Richard C. Allen, A.B., LL.B., LL.M., *Director; Professor of Law in the Graduate School of Public Law*

Elyce Z. Ferster, B.S., LL.B., *Principal Attorney; Associate Research Professor of Law in the Graduate School of Public Law*

Donald Ray Dawidoff, LL.B., *Senior Scientist*

#### NASA ECONOMIC RESEARCH PROJECT

This NASA program includes two projects (1) Patent Policy and the Productivity of Federally Financed Research and Development and (2) Price and Profit Policy in Government Procurement. Funded by a grant from NASA, the project is under the general direction of Arthur E. Burns, *Professor of Economics*, with Donald S. Watson, *Professor of Economics*, in charge of the patent policy study.

Charles E. Bradley, Ph.D., *Senior Staff Scientist; Research Professor of Business Economics*

Mary Holman, Ph.D., *Associate Investigator; Associate Research Professor of Economics*

#### NASA SPACE FLIGHT TELEMETRY PROJECT

This project involves the reduction and analysis of telemetry data

from NASA's sounding rocket program. Machine processing procedures are utilized wherever practical. As part of the analysis phase of this contract, preflight mathematical models are used to simulate the flight and predict the performance and characteristics of the rockets.

Robert Heller, Ph.D., *Director; Professor of Engineering and Applied Science*

#### NSF ECONOMICS RESEARCH PROJECT

A study of local impacts and interactions of concentrations of research and research-based manufacturing. Research includes intensive case studies of Santa Clara County, California, Winston-Salem, North Carolina, and Utah; a review of nationwide data availabilities suitable for local impact studies; and evaluation of case studies and analyses dealing with locational determinants of research and development, locational interactions, and local impacts.

Charles T. Stewart, Jr., Ph.D., *Director; Research Professor of Economics*

S. Scott Sutton, A.M., *Research Scientist*

#### SOCIAL RESEARCH PROJECT

The Social Research Project conducts surveys and experiments with concentration on basic research underlying an approach to the solution of social problems. Current emphasis is on a descriptive survey of American drinking practices, under a grant from the National Institute of Mental Health.

Ira H. Cisin, Ph.D., *Director; Professor of Sociology*

Arthur D. Kirsch, Ph.D., *Senior Staff Scientist; Associate Professor of Statistics*

Ben L. Owens, *Senior Staff Scientist*

#### STATE-LOCAL FINANCE PROJECT

Work will be started during the academic year 1965-66 on a three year study of advance fiscal budgeting in the states and communities, as a facet of economic development programs. In cooperation with the Council of State Governments, the U.S. Conference of Mayors, and other organizations of governments, research is planned on methods of long-range tax projects and also on long-range fiscal programs in states.

Selma J. Mushkin, Ph.D., *Director*

Robert Harris, A.M., *Research Associate*



## RECIPIENTS OF AWARDS 1964-65

### FELLOWSHIPS

*American Security and Trust Company Fellowship:* Charles S. Bunker, B.S., M.B.A.

*Automotive Safety Foundation Fellowship:* John Hayes Reese, B.B.A., LL.B., LL.M.

#### *Scottish Rite Fellowships:*

*Alabama Scottish Rite Fellows of the Consistories of Alabama:* Lisa A. Pickins, A.B.; Ollie Threadgill, A.B.

*Arizona Scottish Rite Fellow of the Consistories of Arizona:* Moses T. Bassous, A.B., B.S.

*California Scottish Rite Fellow of the Consistories of California:* Janet Lamb Shikles, A.B.

*Colorado Scottish Rite Fellow of the Consistories of Colorado:* Margaret Lyon, A.B.

*Florida Scottish Rite Fellow of the Consistories of Florida:* John E. Folds, A.B.

*Iowa Scottish Rite Fellow of the Consistories of Iowa:* Marilyn H. Gilbertson, A.B.

*Louisiana Scottish Rite Fellows of the Consistories of Louisiana:* Doris Formslag, A.B.; Raymond Jacobs, A.B.; Kaylin Kirby, A.B.; John R. Mueller, A.B.; Robert C. Peak, A.B.

*Maryland Scottish Rite Fellow of the Consistories of Maryland:* Kenneth G. Caplan, A.B.

*Minnesota Scottish Rite Fellow of the Consistories of Minnesota:* James S. Burris, A.B.

*Mississippi Scottish Rite Fellow of the Consistories of Mississippi:* Albert Y. Brown, Jr., A.B.

*Missouri Scottish Rite Fellows of the Consistories of Missouri:* Jon D. Cozean, B.J.; Sonja L. Hutcherson, A.B.

*Montana Scottish Rite Fellows of the Consistories of Montana:* James B. Christian, A.B., A.M.; Kenneth M. Christison, B.S.

*New Mexico Scottish Rite Fellow of the Consistories of New Mexico:* David W. Templeton, A.B.

*North Carolina Scottish Rite Fellow of the Consistories of North Carolina:* Dailey J. Derr, A.B.

*Oregon Scottish Rite Fellow of the Consistories of Oregon:* Margo E. Maris, A.B.

*South Dakota Scottish Rite Fellow of the Consistories of South Dakota:* Michael Cole, B.S.

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J. Dallas Shirley, B.S. in P.E. 1936, A.M. in Ed. 1945; 4409 N. Pershing Drive, Arlington, Va.

### *School of Government, Business, and International Affairs:*

Robert A. Aleshire, A.B. in Govt. 1963; 12515 Valleywood Drive, Wheaton, Md.

William S. Cremen, A.B. in Govt. 1949; 4027 Brandywine Street NW., Washington, D.C.

Thaddeus A. Lindner, A.B. in Govt. 1951; 2140 Pennsylvania Avenue NW., Washington, D.C.



*College of General Studies:*

Reginald D. Barta, A.B. 1958; 7623 Mendota Place, Springfield, Va.

J. Frank Doubleday, A.M. 1955; 404 N. Kenmore Street, Arlington, Va.

Albert Pierson, A.B. 1961, M.B.A. 1962; 401 High Street, Alexandria, Va.

*Faculty:*

George M. Koehl, A.M. 1933; 515 Mansfield Road, Silver Spring, Md.

Theodore P. Perros, B.S. 1946, M.S. 1949, Ph.D. 1952; 5825 3d Place NW., Washington, D. C.

*At Large (appointed):*

John R. Busick, A.B. 1936; Director of Development, Jefferson Medical College and Center, Philadelphia, Pa.

Donald W. Cole, M.B.A. 1957; 6166 Joyce Lane, Cincinnati, Ohio

T. Arthur Smith, A.B. in Govt. 1949, A.M. in I.A. 1962; 1609 Simmons Court, McLean, Va.

Appointed members also include the presidents of the recognized alumni associations.

**THE GEORGE WASHINGTON UNIVERSITY MEDICAL ALUMNI ASSOCIATION**

The George Washington University Medical Alumni Association, incorporated in 1959, continues the organization previously known as The George Washington University Medical Society. It has been affiliated with the General Alumni Association since 1926.

The stated purposes of the Association are as follows: "This shall be a nonprofit organization international in scope, whose objectives shall be to provide constructive services for the alumni of The George Washington University School of Medicine, for furthering the art and science of medicine, research, and for the promotion of the welfare of The George Washington University School of Medicine, its students, The George Washington University Hospital and its trainees."

Active membership in the Association consists of: all graduates of the School of Medicine; current members and, on application, past members of the teaching staff of the School of Medicine who hold Doctor's degrees; Doctors of Medicine who have had one or more years of postgraduate training in The George Washington University Hospital.

Junior membership consists of all members of the student body of the School of Medicine during the time they are students.

The Medical Alumni Association maintains an office in the School of Medicine Building at 1335 H Street NW., Washington, D. C. 20005.

1965-66

*President.*—Richard E. Palmer, A.B., M.D. 1944; 315 S. Lee Street, Alexandria, Va.

*President Elect.*—George Speck, M.D. 1941; 4801 Kenmore Avenue, Alexandria, Va.

*First Vice President.*—Jerome H. Epstein, A.M. 1948, M.D. 1953; 8528 W. Howell Road, Bethesda, Md.

*Second Vice President.*—William Brainin, A.B. 1931, M.D. 1934; 6124 Central Avenue, Capitol Heights, Md.

*Secretary.*—James A. Dusbabek, M.D. 1934; 5315 Chamberlain Avenue, Chevy Chase, Md.

*Treasurer.*—Jack B. Kleh, A.B. 1942, M.D. 1944; 1915 19th Street NW., Washington, D. C.

*Councilmen:* 3 years, 1965-68

Ernest A. Gould, M.D. 1939; 4201 Cathedral Avenue NW., Washington, D. C.

Frederick Y. Donn, Jr., M.D. 1941; 800 4th Street NW., Washington, D. C.

*Councilman:* 2 years, 1965-67

Richard M. Huffman, M.D. 1955; 1834 Eye Street NW., Washington, D. C.

#### THE GEORGE WASHINGTON LAW ASSOCIATION

The George Washington Law Association, the organization of graduates of the Law School, was founded in 1912 and has been affiliated with the General Alumni Association since 1926. Its purposes as stated in the constitution are to promote high standards of legal education, to keep the alumni of the Law School in closer touch with one another and especially with members of their own classes, to gather and publish at intervals information as the whereabouts and activities of these alumni, and to further the interests of the Law School.

#### 1964-65

*President.*—Samuel J. L'Hommedieu, Jr., LL.B. 1951, LL.M. 1952; 1627 K Street NW., Washington, D. C.

*First Vice President.*—Glen A. Wilkinson, J.D. 1938; 1616 H Street NW., Washington, D. C.

*Second Vice President.*—W. Theodore Pierson, LL.B. 1938; Ring Building, Washington, D. C.

*Third Vice President.*—Joseph L. Brand, J.D. 1963; 900 17th Street NW., Washington, D. C.

*Secretary.*—Clarence T. Kipps, Jr., J.D. 1953; 1001 Connecticut Avenue NW., Washington, D. C.

*Treasurer.*—Alexander L. Stevas, A.B. 1949, LL.B. 1951; 5603 Maryland Avenue, Falls Church, Va.

#### *Executive Committee:*

Fontaine C. Bradley, LL.B. 1925; Union Trust Building, Washington, D. C.

Gordon W. Daisley, LL.B. 1933; 700 10th Street NW., Washington, D. C.

Lloyd Fletcher, Jr., J.D. 1939; 4851 Maury Lane, Alexandria, Va.

Elizabeth S. Freret, LL.B. 1950; 1 Farragut Square, South, Washington, D. C.

Philip A. Gagan, A.B. 1953, J.D. 1959; Woodward and Lothrop, Washington, D. C.

Marion Edwyn Harrison, LL.B. 1954, LL.M. 1959; 1750 Pennsylvania Avenue NW., Washington, D. C.

Joseph D. Hughes, LL.B. 1934; 525 William Penn Place, Pittsburgh, Pa.

- Thomas S. Jackson, A.B. 1933, LL.B. 1935; 1025 Connecticut Avenue, NW., Washington, D. C.
- Ronald E. Madsen, J.D. 1955; Southern Building, Washington, D. C.
- Philbrick McCoy, LL.B. 1922, LL.M. 1923; The Superior Court, Los Angeles, Calif.
- Donald L. Mooers, LL.B. 1963; 1921 Eye Street NW., Washington, D. C.
- Bernard I. Nordlinger, A.B. 1929, LL.B. 1933; Southern Building, Washington, D. C.
- Kenneth W. Parkinson, A.B. 1950, LL.B. 1952; Tower Building, Washington, D. C.
- Walter F. Sheble, LL.B. 1952, LL.M. 1953; 4120 Leland Street, Chevy Chase, Md.
- John R. Stafford, LL.B. 1962; 8619 Victoria Road, Springfield, Va.
- Joel Barlow, ex officio, LL.B. 1935, Union Trust Building, Washington, D. C.

#### THE LIBRARY SCIENCE ALUMNI ASSOCIATION

The Library Science Alumni Association was organized in 1932 by graduates of the Division of Library Science and became an affiliate of the General Alumni Association in 1935. It was established to foster a closer relationship between the Faculty and graduates and to further the interests of the Division of Library Science and of the University as a whole.

1964-65

- President.*—Margaret Beatrice Maltby, A.B. in L.S. 1933; 2121 Virginia Avenue NW., Washington, D. C.
- Vice President.*—Marguerite Rebecca Quattlebaum, A.B. 1939; 1022 26th Road S., Arlington, Va.
- Secretary.*—Natalie Jane Hopper, A.B. 1942; 4998 Battery Lane, Bethesda, Md.
- Treasurer.*—Elinor Elizabeth Dunnigan, A.B. in L.S. 1930, A.M. 1932; 5205 Colorado Avenue NW., Washington, D. C.

#### THE ENGINEER ALUMNI ASSOCIATION OF THE GEORGE WASHINGTON UNIVERSITY, INC.

The Engineer Alumni Association was organized in 1936 and has been affiliated with the General Alumni Association since that time. Its objects are to unite the graduates and Faculty of the School of Engineering and Applied Science in closer fellowship, to promote the general welfare of the School and of the University at large, to foster activities of the engineering organizations recognized by the University, and to advance the profession of engineering in general.

1965-66

- President.*—Erling B. Jacobsen, B.E.E. 1963; 1121 New Hampshire Avenue NW., Washington, D. C.
- First Vice President.*—Laurance R. Brown, B.S. in Eng. 1949, M.S. in Eng. 1958; 8103 Bardu Court, West Springfield, Va.



*Second Vice President.*—John Raymond Manning, B.S. in Eng. 1957, LL.B. 1961; 1914 N. Woodstock Street, Arlington, Va.  
*Third Vice President.*—William Kittredge Whittemore, B.E.E. 1950; 7320 Dunston Street, North Springfield, Va.  
*Secretary.*—Dulaney F. de Butts III, B.C.E. 1962; 204 Claude Street, Annapolis, Md.  
*Assistant Secretary.*—Edward Alexander Wareham III, B.E.E. 1953; 5004 Rodman Road, Washington, D. C.  
*Treasurer.*—Douglas L. Jones, B.M.E. 1963, M.S. in Eng. 1965; 2110 N. Pierce Street, Arlington, Va.

#### THE GEORGE WASHINGTON UNIVERSITY NURSES ASSOCIATION

The George Washington University Nurses Association was organized in 1914. In 1936, this organization was made an integral part of the General Alumni Association, and graduates of the School of Nursing were accorded associate membership. The objects of the Association are to hold in unison the graduates of The George Washington University Hospital School for Nurses, to care for its sick members, and to promote the advance of nursing in the interest of The George Washington University Hospital.

1964-65

*President.*—Gustava S. Goshorn; 1816 N. Queens Lane, Arlington, Va.  
*Vice President.*—Laura F. Sandres; 2707 Adams Mill Road NW., Washington, D. C.  
*Treasurer.*—Alma S. Binks; 5101 Sargent Road NE., Washington, D. C.  
*Secretary.*—Martha Lee Stoehr; 415 Silver Spring Avenue, Silver Spring, Md.

#### WOMEN'S PHYSICAL EDUCATION ALUMNAE ASSOCIATION

The purpose of this organization is to foster and promote the teaching profession in the fields of Health, Physical Education, and Recreation. Its functions are (1) to attract students to the profession who show evidence of outstanding teaching capability, (2) to offer professional guidance to members in this field of work, (3) to render service to the community, (4) to render service to the University.

1963-64

*President.*—Audrey M. Shropshire, B.S. in P.E. 1958; 1240 N. Quantico Street, Arlington, Va.  
*Secretary.*—Eunice S. Butkus, B.S. in P.E. 1943; 5122 3d Street NW., Washington, D. C.  
*Treasurer.*—Nancy W. Jensen, B.S. in P.E. 1944; 6209 Rockhurst Road, Bethesda, Md.

#### REGIONAL ALUMNI CLUBS

Regional alumni clubs sponsored by the General Alumni Association are active in the following areas: Miami, Fla.; Brooklyn, N. Y.;

Philadelphia, Pa.; Dallas, Texas; Northern California; Philippine Islands; and Puerto Rico.

Information about the officers and activities of these clubs may be obtained from the Alumni Office of the University.

#### THE LETTERMEN CLUB

The membership of this organization shall consist of those men who, for participation in a sport at The George Washington University, have been awarded varsity letters or freshman numerals, who are no longer undergraduate students of the University; and those men who, for managing a freshman or varsity sport, received letters or numerals.

The objectives of the club are to (1) bring together on a social level former lettermen of all sports, (2) renew acquaintances and promote fellowship, (3) encourage higher ideals of intercollegiate athletics at the University, and (4) assist the University in matters pertaining to athletics when requested.

1965-66

*President.*—Ellis Hall, A.B. in Ed. 1943; 4810 33d Road N., Arlington, Va.

*Vice President.*—Richard C. Claypool, B.S. in P.E. 1958, A.M. in Ed. 1962; 114 Melody Lane, Vienna, Va.

*Secretary.*—James Dallas Shirley, B.S. in P.E. 1936, A.M. in Ed. 1945; 4409 N. Pershing Drive, Arlington, Va.

*Treasurer.* Charles B. Reed, B.S. in P.E. 1963, A.M. in Ed. 1964; 3440 Terrace Court, Alexandria, Va.

#### THE GRADUATE ENDOWMENT FUND

The Graduate Endowment Fund was founded by the class of 1926 with the object of providing endowment to be used for the development of the University. Membership is limited to seniors and graduates who sign a pledge of \$100, payable annually in ten equal installments.

The pledge notes and funds are held in trust. When the principal reaches the sum of \$100,000, the Board of Administrators of the Fund may pay the University such sum as it may vote for the erection of buildings, acquisition of sites, maintenance, and purchase of equipment. At no time may money be drawn so as to leave a balance of less than \$50,000 on deposit.

#### THE COLUMBIAN WOMEN

The objectives of this organization are (1) the promotion of acquaintanceship among its members, (2) the advancement of women by the founding of scholarships in the various departments of the University, and (3) the promotion of the interests of the University.

#### MEMBERSHIP

The following persons shall be eligible for active membership: (a) any woman who is currently registered or has been previously regis-

tered as a student in The George Washington University; (b) any woman member of the Faculties or Board of Trustees, any woman on the administrative staff; the wife of any member of the Faculties, Board of Trustees, or the administrative staff; (c) any woman recipient of an honorary degree from the University.

#### 1965-66

*President.*—Elma Williams, A.B. 1954; 3600 Connecticut Avenue NW., Washington, D.C.

*First Vice President.*—Sue Burnett Panzer (Mrs. Irving R.M.) A.B. 1941; 2500 Que Street NW., Washington, D. C.

*Second Vice President.*—Tahmineh I. Parsons (Mrs. George), B.S. in H.E. 1955, A.M. in Ed. 1958; 2101 Yorktown Road NW., Washington, D. C.

*Recording Secretary.*—Marcella M. Burris (Mrs. Boyd L.) 3618 Van Ness Street NW., Washington, D. C.

*Corresponding Secretary.*—Karlota Koester, A.B. 1960, 5615 First Street NW., Washington, D. C.

*Assistant Corresponding Secretary.*—Elizabeth L. Vaughn, B.B.A. 1962; 1420 Abingdon Drive, Alexandria, Va.

*Treasurer.*—Grace A. Wilson; 7211 Exeter Road, Bethesda, Md.

*Assistant Treasurer.*—Mary Winifred Cox, A.B. 1940, A.B. in Ed. 1947; 2013 New Hampshire Avenue, NW., Washington, D. C.

*Historian.*—Eleanor DeAngelis (Mrs. Vincent J.); 3600 N. Peary Street, Arlington, Va.

*Past President.*—Mary Murray Kochka (Mrs. Joseph L.), A.B. and B.Dip. in Ed. 1918, A.M. 1931; 5629 Lamar Road NW., Washington, D. C.

#### THE WOMEN'S BOARD OF THE GEORGE WASHINGTON UNIVERSITY HOSPITAL

The object of this organization is to aid in every way the interests and advancement of The George Washington University Hospital. Meetings are held on the first Wednesday of each month, October to June, inclusive. Inquiries regarding membership should be addressed to the Corresponding Secretary, The George Washington University, Washington, D. C. 20006.

#### 1965-66

*Honorary President.*—Mrs. Cloyd H. Marvin

*President.*—Mrs. Samuel M. Burgess II

*First Vice President.*—Mrs. James J. Feffer

*Second Vice President.*—Mrs. Joseph H. Roe

*Third Vice President.*—Mrs. Daniel J. Andersen

*Recording Secretary.*—Mrs. Alvin E. Parrish

*Corresponding Secretary.*—Mrs. Kermit M. Lovewell

*Assistant Corresponding Secretary.*—Mrs. William O. Ticknor

*Treasurer.*—Mrs. Joseph Sadusk, Jr.

*Assistant Treasurer.*—Mrs. Meredith P. Crawford

#### *Directors:*

Mrs. Wolfram K. Legner

Mrs. Martin A. Mason

Mrs. Barton W. Richwine

Mrs. Carl H. Walther



## STATISTICAL RECORD

### Summary of Registration 1964-65

#### COLUMBIAN COLLEGE OF ARTS AND SCIENCES

	FALL SEMESTER			SPRING SEMESTER		
	Men	Women	Total	Men	Women	Total
Lower Division	1,159	1,306	2,465	1,090	1,226	2,316
Upper Division	503	760	1,263	476	698	1,174
Graduate Division	424	274	698	371	274	645
Unclassified	9	13	22	11	14	25
Total	2,095	2,353	4,448	1,948	2,212	4,160

#### GRADUATE COUNCIL

Doctor of Philosophy	244	90	334	251	97	348
Unclassified	1	1	2	3	1	4
Total	245	91	336	254	98	352

#### SCHOOL OF MEDICINE

Doctor of Medicine	357	28	385	354	29	383
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#### LAW SCHOOL

Bachelor of Laws and Juris Doctor	990	60	1,050	953	64	1,017
Unclassified	1	—	1	4	—	4
Total	991	60	1,051	957	64	1,021

#### GRADUATE SCHOOL OF PUBLIC LAW

Graduate	65	4	69	78	6	84
Unclassified	85	7	92	50	5	55
Total	150	11	161	128	11	139

### SCHOOL OF ENGINEERING AND APPLIED SCIENCE

	FALL SEMESTER			SPRING SEMESTER		
	Men	Women	Total	Men	Women	Total
Undergraduate .....	472	7	479	449	6	455
Graduate .....	868	5	873	809	4	813
Unclassified .....	45	—	45	10	2	12
Total .....	323	505	828	334	469	803

### SCHOOL OF EDUCATION

Undergraduate .....	43	198	241	48	191	239
Graduate .....	254	263	517	279	269	548
Unclassified .....	26	44	70	7	9	16
Total .....	323	505	828	334	469	803

### SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS

Undergraduate .....	250	96	346	251	83	334
Graduate .....	846	91	937	860	97	957
Unclassified .....	30	4	34	9	1	10
Total .....	1,126	191	1,317	1,120	181	1,301

### COLLEGE OF GENERAL STUDIES CAMPUS STUDY

Undergraduate .....	66	15	81	49	15	64
Graduate .....	22	4	26	22	3	25
Unclassified .....	9	3	12	2	—	2
Total .....	97	22	119	73	18	91

### DIVISION OF UNIVERSITY STUDENTS

University Students ..	1,258	767	2,025	1,052	736	1,788
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### SUMMARY

Undergraduate .....	2,493	2,382	4,875	2,363	2,219	4,582
Graduate .....	4,070	819	4,889	3,977	843	4,820
Unclassified .....	1,464	839	2,303	1,148	768	1,916
Total .....	8,027	4,040	12,067	7,488	3,830	11,318

### SUMMER SESSIONS REGISTRATION 1964

Men .....	2,730
Women .....	1,873
Total .....	4,603

## COLLEGE OF GENERAL STUDIES OFF-CAMPUS STUDY

	FALL SEMESTER			SPRING SEMESTER		
	Men	Women	Total	Men	Women	Total
Degree Candidates						
Undergraduate	406	49	455	408	63	471
Graduate	1,263	20	1,283	1,222	23	1,245
Total	1,669	69	1,738	1,630	86	1,716
Nondegree Status						
	3,101	789	3,890	3,040	749	3,789
Total	4,770	858	5,628	4,670	839	5,505

### SUMMER SESSIONS 1964

	Men	Women	Total
Degree Candidates	1,256	24	1,280
Nondegree Status	1,245	202	1,447
Total	2,501	226	2,727

## GEOGRAPHICAL DISTRIBUTION OF STUDENTS

### UNITED STATES, TERRITORIES, AND POSSESSIONS

	FALL			FALL	
	FALL	SPRING		FALL	SPRING
Alabama	34	31	Nevada	13	14
Alaska	10	10	New Hampshire	11	13
Arizona	20	18	New Jersey	488	464
Arkansas	26	25	New Mexico	23	21
California	239	229	New York	987	931
Colorado	31	34	North Carolina	59	52
Connecticut	185	174	North Dakota	17	18
Delaware	31	26	Ohio	183	188
District of Columbia	2,239	2,117	Oklahoma	45	41
Florida	124	126	Oregon	22	24
Georgia	55	52	Pennsylvania	495	475
Hawaii	20	22	Rhode Island	44	42
Idaho	35	34	South Carolina	30	26
Illinois	149	140	South Dakota	17	17
Indiana	54	54	Tennessee	36	31
Iowa	37	37	Texas	120	100
Kansas	38	35	Utah	67	67
Kentucky	34	28	Vermont	12	12
Louisiana	23	17	Virginia	2,717	2,549
Maine	34	27	Washington	47	44
Maryland	2,055	1,943	West Virginia	64	59
Massachusetts	222	204	Wisconsin	50	50
Michigan	88	90	Wyoming	9	9
Minnesota	44	38	Guam	7	3
Mississippi	21	22	Panama Canal Zone	1	—
Missouri	64	58	Puerto Rico	11	11
Montana	20	16	Virgin Islands	2	2
Nebraska	27	27			



# FOREIGN COUNTRIES

	FALL SPRING			FALL SPRING	
Afghanistan	1	1	Jamaica	—	2
Algeria	—	5	Japan	16	13
Argentina	6	3	Jordan	7	5
Australia	1	2	Kenya	1	1
Austria	1	—	Korea	22	20
Belgium	4	3	Lebanon	4	3
Bolivia	6	5	Liberia	4	3
Brazil	7	3	Libya	4	5
British Guiana	1	1	Malaya	2	2
British West Indies	3	2	Martinique	1	—
Burma	5	4	Morocco	3	2
Canada	13	11	Netherlands	4	7
Chile	4	3	Nicaragua	3	3
China	16	15	Nigeria	3	1
Colombia	8	8	Norway	—	1
Costa Rica	3	2	Okinawa	1	1
Cuba	12	13	Pakistan	5	6
Denmark	4	4	Palestine	1	1
Dominican Republic	2	3	Panama	6	5
Ecuador	3	4	Paraguay	1	—
Egypt	10	8	Peru	5	9
El Salvador	3	2	Philippine Islands	12	8
England	15	15	Poland	2	—
Ethiopia	1	—	Portugal	1	—
Finland	—	2	Saudi Arabia	1	1
Formosa	1	2	Scotland	1	1
France	5	8	Somali	1	1
Germany	18	14	South Africa	1	1
Ghana	1	2	Spain	1	—
Greece	—	9	Sudan	1	1
Guatemala	12	1	Sweden	3	2
Guinea, Republic of	3	3	Switzerland	4	1
Haiti	5	2	Syria	1	1
Honduras	—	1	Thailand	11	8
Hong Kong	3	3	Tunisia	1	1
Hungary	—	1	Turkey	10	11
India	29	28	United Arab Republic	8	8
Indonesia	10	9	Uruguay	1	—
Iran	17	18	Venezuela	7	4
Iraq	11	12	Viet Nam	7	7
Ireland	1	1	Yugoslavia	—	1
Israel	5	9	Stateless	2	1
Italy	6	5			

## Summary of Degrees Conferred 1964-65

	SUMMER	FEB.	JUNE	TOTAL
Advanced Professional Certificate (Education)				
Associate in Arts (College of General Studies)	6	4	6	16
Associate in Arts (Columbian College of Arts and Sciences)	8	10	17	35
Bachelor of Arts (College of General Studies)	9	12	12	33
	45	44	46	135

54 DEGREES CONFERRED 1964-65

	SUMMER	FEB.	JUNE	TOTAL
Bachelor of Arts (Columbian College of Arts and Sciences)	74	87	293	448
Bachelor of Arts in Education	22	13	66	101
Bachelor of Arts in Government	7	5	56	68
Bachelor of Business Administration (College of General Studies)	1	5	12	18
Bachelor of Business Administration (School of Government, Business, and International Affairs)	14	16	38	68
Bachelor of Civil Engineering	1	—	4	5
Bachelor of Electrical Engineering	2	5	17	24
Bachelor of Laws	42	56	111	209
Bachelor of Mechanical Engineering	2	1	7	10
Bachelor of Science (Columbian College of Arts and Sciences)	10	7	42	59
Bachelor of Science (Civil Engineering)	1	1	2	4
Bachelor of Science (Communications)	—	—	2	2
Bachelor of Science (Electrical Engineering)	—	1	—	1
Bachelor of Science (Electronics)	2	2	2	6
Bachelor of Science (Engineering Science)	—	—	1	1
Bachelor of Science (Machine Computers)	1	—	—	1
Bachelor of Science (Mechanical Engineering)	—	1	3	4
Bachelor of Science (Theoretical and Applied Mechanics)	—	1	—	1
Bachelor of Science in Engineering	2	—	4	6
Bachelor of Science in Geodetic and Cartographic Science	—	1	1	2
Bachelor of Science in Home Economics	—	2	5	7
Bachelor of Science in Medical Technology	4	1	1	6
Bachelor of Science in Physical Education	3	4	5	12
Doctor of Business Administration	1	2	2	5
Doctor of Education	—	8	6	14
Doctor of Juridical Science	—	1	1	2
Doctor of Medicine	—	—	89	89
Doctor of Philosophy	6	7	12	25
Doctor of Public Administration	—	—	1	1
Doctor of Science	—	—	1	1
Education Specialist	—	1	—	1
Juris Doctor	—	1	1	2
Master of Arts (College of General Studies)	53	58	68	179
Master of Arts (Columbian College of Arts and Sciences)	16	27	42	85
Master of Arts in Education	67	33	69	169
Master of Arts in Government	10	20	21	51
Master of Arts in International Affairs (College of General Studies)	349	40	32	421
Master of Arts in Teaching	—	—	19	19
Master of Business Administration (College of General Studies)	18	5	1	24
Master of Business Administration (School of Government, Business, and International Affairs)	24	12	107	143
Master of Comparative Law	2	—	3	5
Master of Comparative Law (American Practice)	2	1	1	4
Master of Engineering Administration	5	39	29	73
Master of Fine Arts	—	—	2	2

	SUMMER	FEB.	JUNE	TOTAL
Master of Laws	3	7	13	23
Master of Public Administration (College of General Studies)	3	1	—	4
Master of Public Administration (School of Government, Business, and International Affairs)	—	1	2	3
Master of Science	4	4	14	22
Master of Science in Business Administration	145	10	8	163
Master of Science in Engineering	5	19	18	42
Master of Science in Financial Management	—	6	5	11
Master of Science in Governmental Administration	—	2	3	5
Master of Science in International Affairs	—	5	5	10
Master of Science in Personnel Administration	—	13	40	53
Master of Science in Public Administration	66	4	19	89
Master of Science (School of Engineering and Applied Science)	—	1	7	8
Total	1,035	601	1,394	3,030

### Teaching Staff 1964-65

Professors Emeriti	63
Professors	179
Research Professors	7
Adjunct Professors	12
Visiting Professors	7
Professorial Lecturers	119
Clinical Professors	43
Associate Professors	107
Associate Research Professors	5
Visiting Associate Professors	3
Associate Clinical Professors	73
Associate Professorial Lecturers	73
Associates in the School of Medicine	150
Assistant Professors	119
Assistant Research Professors	13
Visiting Assistant Professors	4
Assistant Clinical Professors	157
Assistant Professorial Lecturers	121
Lecturers	4
Instructors	42
Instructors (part-time)	89
Clinical Instructors	187
Fellows in the School of Medicine	51
Fellows (nonmedical)	31
University Teaching Fellows	32
Graduate Teaching Assistants	36
Total	1,727



## DEGREES CONFERRED

### Columbian College of Arts and Sciences

#### ASSOCIATE IN ARTS

FEBRUARY 22, 1965

William John Campbell	Va.	Robert Martin Rogers	Fla.
*Suzanne Frances Dietz	Md.	Stephen Leo Sharfman	N.J.
*Susan Brigham Flint	Mass.	John Julius Sloan	N.J.
*Geromina Lucia Gennusa	D.C.	*Steven Alan Slossberg	Conn.
Joan Marie Goodlin	Fla.	*David M. Stern	N.Y.
(With distinction)		*Richard Elmo Stotler	D.C.
Ronald Mark Greenberg	Va.	John Michael Sugden	N.J.
Glynda Virginia Hamilton	Ga.	*Roger Clarence Tripp	Va.
Bai Thi Le	D.C.	Léone Visse	D.C.
*Judith Ann Lehnowsky	Pa.	Ronald Harvey Wohl	Md.
*Andrea Sophia Narkawicz	Conn.	Judy Pamela Ziegler	Ohio

JUNE 6, 1965

Peter Steven Aborn	Mass.	John Michael Mullen	Pa.
Helen Covert Anderson	D.C.	Waldorf Adolphus Nelson, Jr.	Md.
Edward Eugene Berkin	N.Y.	Martha Perlowych	N.J.
Naomi Adelaide Bradshaw	D.C.	Thomas M. Rogers	Ariz.
Patricia Jean Catanzariti	N.Y.	William Fleming Smith	Va.
Bonita Baird Layton	Ill.	Suzanne Riley Sparks	D.C.

#### BACHELOR OF ARTS

FEBRUARY 22, 1965

Robert Ames Alden	Va.	Heidi Lehrman Berry	Md.
Evelyn Jeanne Marcella Woerheide Arana	Va.	*Wyatt Herbert Bissett, Jr.	D.C.
*Luz Maria Aveleyra	D.C.	*Judith Arleen Block	D.C.
*Kate Wilder Avery	Va.	Priscilla Jan Bloom	Va.
*Marilyn Baker	R.I.	Joanne M. Blum	Va.
(With distinction)		*Carol Krissman Bodin	Md.
*David Lewis Valentine	S.C.	*Reginald Weller Bours III	Va.
Susan Jane Ballinger	D.C.	Francis Louis Breen	D.C.
Douglas Paul Bailuff	Calif.	Barbara Jean Brehm	D.C.
Frank Custer Barger	D.C.	Bert Mahlon Brown III	Nev.
*Mary Lynn Barlow	Va.	*Mary Louisa Brown	D.C.
*Anne Cecelia Becklean	Va.	*Natalie Phillips Burke	Va.
Gordon Shockey Bennett	Va.	Diana Marie Bush	Va.
Devin Charles Bent	Va.	Florence H. Campi	D.C.
Joanne M. Berkowitz	D.C.	Carol Lee Chin	D.C.
*James Guthrie Bernet	Pa.	*Constance Stavropoulos Collis	Ky.

\*Degree awarded September 30, 1964.

Dominic John Costanzo	N.J.	*Steppie Filbert Luebke	Conn.
*Joel Ralph Crenshaw	Va.	*Grace MacFarlane	Calif.
Thomas Corey Currier, Jr.	Va.	Kathleen Ann Mach	Va.
Kenneth Edward Curtis	Md.	*Georgia Fenwick Maitland	D.C.
*Alfonso John Damico	Ohio	*Naarin Malavery	Iran
Edward Stanley Darke	Va.	(Special honors in History)	
Diana Hill Davis	Wash.	Bonnie Clem Manwell	D.C.
*William R. Davis, Jr.	Liberia	*John Cosmo McCulloch III	N.Y.
Paul Joseph Devine, Jr.	Va.	Joseph Robert McDermott	Va.
*Alan M. de Vries	N.Y.	Virgil Eugene McMahan	D.C.
*John Hart Dohring	Va.	Mary Wellemeyer McNally	D.C.
*Nancy Alice Eklund	Mich.	*Micheleen Mitchell McNeill	Md.
Ann Ashton Elgin	D.C.	*Emma Katherine Meekins	Md.
*Emilie Francis Ellis	Md.	Adrienne Marcia Miller	Fla.
Caroline Evans	Va.	*Stephen Lewis Milstein	N.J.
*Marilyn June Evans	Va.	Marya Anne Mooney	Md.
(With distinction)		*Jon Richard Moore	Va.
*Mary Marler Ewing	D.C.	Anthony Muchnicki	N.Y.
Valda Jean Farris	Md.	Richard Joseph Mudd	Md.
Walter Robert Fatzinger, Jr.	Va.	*Robert Stewart Murphy	D.C.
Gary Peter Fleming	N.J.	Randolph Louis Mye	Calif.
*Deborah Fort	D.C.	*Susan Lawrence Nathenson	D.C.
*John K. Foster, Jr.	W. Va.	Ann Elizabeth Nelson	Va.
*Henry Pope Fowler, Jr.	Md.	Joan Cooledge Nemser	Va.
Dorothea Schreiber Fry	Md.	Hyman Nussbaum	Md.
Thomas Michael Gerig	D.C.	Lloyd Edward Oliver	N.J.
Edward Banks Gibson III	Va.	*Mary Ann Olshine	Va.
Robert Lewis Glazer	Md.	*Robert Buell Palmer	D.C.
*Gray Lars Glenn	Va.	*Victor S. Perry	N.Y.
*Leon Gluck	N.M.	*Victor Michael Petriella	N.J.
Marvin Norman Gordon	Va.	Sally Taylor Pleasants	Va.
Sallie McClernon Greenwood	Va.	*David Richard Porch	Va.
Joan Dorothy Guggenheim	Md.	*Euthemia P. Protonotarios	D.C.
*Barry Richard Handloff	D.C.	*Janet Susan Ramsey	Calif.
Helene Margaret Harper	D.C.	*Noble Ray	D.C.
*Carol Davis Hart	Md.	*Jill Miriam Raymond	D.C.
Naomi Funada Hartwick	Va.	Donna Myra Rosenthal	N.Y.
Beverly Joan Heilman	D.C.	*Phillip Ross Runfola	N.Y.
*Rudolph Alexander Heintze	Md.	Frank Russo	Va.
Elaine Daphne Hirz	Ill.	*Beatrice Harrow Schwartzman	D.C.
*Christy Ann Hoffman	D.C.	Mark Ashley Sellers, Jr.	D.C.
James Donald Hogg	Calif.	Sara Schifter de Sharratt	D.C.
*Daniel David Hopkinson	D.C.	*Richard Harris Sheehan, Jr.	Va.
*Robert Indelman	N.Y.	*Sandra Benn Shelley	N.Y.
Ashton S. Ingram	D.C.	Jerome Alan Silbert	N.Y.
Frances Jean Janney	D.C.	*Willis Franklin Sloan, Jr.	Md.
*Robert Alan Jones	Va.	*Patsy Madelyn Smith	Va.
*Sophia Alicia Kaminski	D.C.	(Special honors in Art History and Theory)	
Peyton Armstrong Kerr III	Md.	Carolyn Elizabeth Sommer	Wash.
Carol Mihyang Kim	D.C.	Susan Frances Stein	N.Y.
*Michael J. Kline	Va.	John Cary Stone	Va.
Jane Clair Knierim	Va.	*Jill Stormer	D.C.
Norma Margaret Koenig	Va.	Valerie Magyar Stubbs	D.C.
*Bessie Rita Koubele	D.C.	*Carolyn Morris Subin	Va.
Diana Lynn Krainin	N.Y.	*Hannah Jane Tague	Mo.
Karen Ellen Kravette	Md.	(With distinction)	
*Charles Anthony Lally	D.C.	*Michael Aloysious Toole	Md.
*Mario La Monica	N.J.	Kathleen Gale Ursin	Va.
Nancy Carol Larmon	Ky.	Mary Elizabeth Watkins	Ohio
Gina Marylyn Lazzari	Md.	Katherine Ann Watson	S.C.
*Melba Jean Lee	D.C.	Janet Merle Weisblut	D.C.
*June Diane Levine	N.Y.	Marilyn Wender	N.Y.
*Herbert John Lewis	N.Y.	*Kay Cleveland White	D.C.
Robert Marvin Litman	D.C.	Brenda Marie Wolak	N.J.

JUNE 6, 1965

Linda Elizabeth Aaronson	D.C.	Carolyn Louise Anderson	Ohio
Judith B. Abend	Va.	Margaret Makruhl Assaturian	Va.
Todd Mac Kinnon Ackley	N.J.	Bari C. Attis	Va.
J'aime Anne Adams	D.C.	Greta Ann Baker	Ark.
Calvin Lane Ahlgren	Tenn.	Carol Margaret Baldwin	Va.
Kathleen Marie Alder	Idaho	Lois Beth Barder	D.C.
(With distinction)		Thomas Owens Barnes	Tenn.
Barbara Joan Altman	Pa.	Susan Vance Barnett	Va.

\*Degree awarded September 30, 1964.

Eleanor Sandra Bass	N.Y.	Claire Capen Foster	Mo.
Nancy Sue Bell	Md.	Jack David Frances	Va.
Dorothy Ann Bellinger	Va.	Geraldine Wilma Anne Frees	Fla.
Mohamed Benlemlih	Morocco	(With distinction—Special honors in English Literature)	
Shirley Ann Berezsky	D.C.	Carol Sue Freidin	N.Y.
(Special honors in Russian)		Phyllis Joan Friedlander	D.C.
Winifred Anne Berg	Va.	Linda Elizabeth Frost	D.C.
Marsha Janice Berger	N.J.	Thomas Barrett Gaines	Va.
Daphne Ruth Bethell	N.J.	Audrey Ann Gardner	Pa.
Charles Bier	D.C.	Mary E. Gawronski	N.Y.
William Frederick Blocher, Jr.	D.C.	John Roy Ghent	Va.
Marion Augusta Blunt	Md.	George Augustus Gibson	D.C.
Susan Jane Bogle	Fla.	Charles C. Gilbert III	Texas
Joan Myers Bondareff	D.C.	Allan Bruce Goldberg	Md.
Susan Irene Bonn	Va.	Sharon Phyllis Goozh	D.C.
Susan Katharine Brandis	Va.	Peter Thomas Louis Gottschalk	W.Va.
Rosemary Ann Breen	Conn.	Susan Deborah Gould	Md.
Carol Ann Brewton	Va.	William A. Gralnick	N.Y.
Elizabeth Jane Brinkerhoff	N.J.	Dinah L. Gray	Va.
Paulette Fradel Brombart	D.C.	David Kirk Grayson	D.C.
Doreen Carole Buck	Va.	Leonard Gross	N.J.
Kate Gridley Buddy	Conn.	Ann Janvier Haines	N.J.
Brigid Theresa Burkert	Va.	Mary Agnes Hallaren	Va.
(With distinction)		Ruth Elaine Hallmark	Va.
Helen Dorothy Burn	Pa.	(With distinction)	
Lillian Vasiliki Caparell	N.Y.	Alice Mary Handwerk	Md.
Anne Gilbert Carter	Md.	Ann Louise Hanly	D.C.
Thomas G. Carter	D.C.	Karen Kay Hanson	Va.
Patricia Ann Catalde	N.Y.	Lisa Lippold Hantman	D.C.
Sandra M. Cavanaugh	D.C.	Allen Keith Harris, Jr.	Okla.
(Special honors in Speech)		Lewis Beach Hastings	Ariz.
Carolyn Ruth Chapman	N.Y.	Neil Gilbert Hausig	N.Y.
Harvey M. Chapman	Del.	Henry Hugh Hecla	Va.
Annette Louise Chase	Va.	(With distinction)	
Margaret Mayo Chase	Va.	Elizabeth Ann Hickey	D.C.
Richard Charles Churchill	Va.	Stephen Randall Holtzman	Md.
Margaret Johnson Cirillo	Va.	Douglas N. Hornig	Md.
Alexander Anton Clain-Stefanelli	Md.	Roxie Lee Houff	Va.
Anne Marie Clark	D.C.	Barbara Alley Hudgins	D.C.
David Allen Clarke	N.Y.	Ruth Joan Hurvitz	D.C.
Barbara Lynn Clements	Md.	Jeremy Bradford Jackson	D.C.
Merrily Allen Clift	Ill.	William Dabney Jarman, Jr.	D.C.
Myrtle Edith Coggeshall	Va.	Kenneth Alan Joseph	N.Y.
Sallie Ann Coggin	D.C.	Mary Gertrude Judge	Maine
Edmund David Cohen	Va.	R. Irawan Kadiman	Indonesia
Thomas Night Collins	D.C.	Clara Laurel Kaji	D.C.
Gale W. Conard	Va.	(With distinction)	
Margaret Lynne Conlan	Ga.	Mildred Wight Kammholz	N.Y.
Linnis Irene Cook		(With distinction)	
(Special honors in English Literature)		Pauline Alice Keehn	D.C.
Margaret Cannon Coons	Va.	Kathleen A. Kelleher	N.Y.
Carol Ann Cox	N.Y.	Terence Francis Kelly	D.C.
Mary Louise Cross	Md.	Edward Crawford Kemper III	Va.
(With distinction)		Margaret Pendleton Kennedy	Md.
Owen Neal Cummins	Va.	Anne Clayton Kerby	Va.
Elizabeth Carroll Cunningham	D.C.	Agnes Ann Kiely	N.Y.
Genevieve Mary Cusick	D.C.	Judith Sylvane King	D.C.
Carolyn Elena Davis	D.C.	Patay Ann Pechacek Klaus	Va.
James Henry Dawson	D.C.	Edward William Knappman	N.J.
Ellen W. Dayton	N.J.	Bonnie Louise Knickerbocker	Va.
Bernadette Maryann Dee	Mass.	Karen Koenig	Calif.
Maureen Eileen DeLaney	Idaho	Alice Korff	D.C.
George C. Detwiler	Md.	Nancy Ellen Kronheim	D.C.
Stuart Harvey Dickman	N.J.	Nancy Lou Krumpeck	D.C.
Shirley Ann Douglas	Va.	Herbert Ralph Kubli	D.C.
Donna Dorothea Doyle	N.J.	Wolfgang Peter H. Kuhn	N.Y.
Adrienne H. Dreier	Md.	Virginia Loomis Lada-Mocarski	N.J.
Leland George Dribin	Va.	Maury S. Landsman	D.C.
Martha Lynn Driskill	Md.	(With distinction)	
Ellen Phyllis Duberstein	N.Y.	Harry Jennings Leach, Jr.	Va.
Robert Anthony Dublin	Md.	Charles Richard Lee	D.C.
Arlene Judith Erlich	D.C.	Robert Theodore Levine	N.J.
Marvin Jack Feldman		(With distinction)	
(With distinction)		Phyllis Lee Levitin	N.Y.
Baruch Abraham Fellner	D.C.	Rona Lichtman	Va.
(With distinction)		David Scott Littlewood	N.Y.
Margaret Lorraine Ferm	Va.	Jane Van Buren Lockwood	N.Y.
Cornelia Truxtun Fitzgerald	Md.	Leslie Ann Lockwood	D.C.
Margaret Gouldin Fletcher	Pa.	George Blaine Lotz II	Pa.
Susan Brigham Flint	D.C.		



Bruce Michael Louiselle	Va.	Susan Scruggs Roach	Conn.
Michaella Lowe	N.Y.	Mary Ellen Roarty	Md.
Sidney S. Loxley	Ohio	Anne Margaret Roberts	D.C.
Kristina Collins MacGaffin	Va.	John Williston Robinson	D.C.
Therese Mackie	D.C.	Matthew L. Roth	N.Y.
Judith Helen Magee	Va.	David Rothbart	N.Y.
Mary Leach Maltby	Conn.	Carl Jan Rothschild	Md.
William F. Marston	Va.	John James Rowsey, Jr.	Va.
Mary Sarah Martin	Calif.	Beth Rubin	Md.
Fred Harrison Massey, Jr.	D.C.	Mary Sharon Rush	Ky.
Mary Elliott McElhinney	Va.	Rudolf Franz Russart	Va.
Roxanne McEntee	D.C.	Kathy Claire Sammis	Conn.
Richard H. Meade	N.J.	James Bruce Savin	N.J.
Rebecca Mehlman	Md.	Charles Alexander Sawchenko, Jr.	D.C.
Mary Lee Mellor	D.C.	Gerald Frank Sazama	Wis.
Judith Ann Menaugh	Va.	Kenneth L. Schoen	N.Y.
John Condon Merkel	Wash.	Pamela C. Scullen	Mass.
Glenna Gay Mesnier	Va.	Linda Sue Seinfeld	N.Y.
(Special honors in History)		(With distinction)	
Glenn Russell Miller	Va.	Sandra Williams Serlin	Va.
Herbert Samuel Miller	Md.	Josephine Ross Shepard	D.C.
Martha Bow Miller	Fla.	Mary Lowney Shinkwin	Va.
(With distinction)		Merna Barbara Shulman	D.C.
Marianne Munson Milloy	N.D.	Irma Sue Silverman	Va.
Paul T. Milloy	N.D.	Margaret Anne Simes	N.Y.
Margaret Lucile Miskelly	Ill.	(Special honors in English Literature)	
George Paul Modrak	D.C.	Maria Jeanne Simmons	Va.
Margaret Angeline Moran	Va.	Abbe Robert Singer	Md.
Diane Sigrid Mroczek	N.J.	Danny Singer	Mo.
John Michael Mullen	Pa.	Billie Carolyn Slayden	D.C.
Nathanael Greene Mullener	D.C.	Nancy Lee Smith	Mich.
(With distinction—Special honors in Psychology)		Barbara Smotrich	Md.
David Emile Mungello	Pa.	Arthur Joel Sober	D.C.
Loula Timothy Nau	D.C.	(With distinction)	
Margaret Ann Nelsen	Md.	Barry M. Spiegel	N.Y.
Terri Sontag Nelson	D.C.	Jeffrey Bennett Springer	Md.
(With distinction)		Carol Ann Starzan	Pa.
Judith Ann Nevins	N.J.	Thomas A. Stephen-Hassard	Calif.
Steven David Newburg	D.C.	(With distinction)	
Mai Thi Tuyet Nguyen	Vietnam	Linda Darlene Storey	D.C.
Jane Ellen Nielson	D.C.	(With distinction)	
(With distinction)		Michaela H. Svehia	Md.
Susan Ann Nizen	Conn.	Diane Jane Szostak	N.Y.
John William O'Connell	D.C.	Joan Chadyeane Taylor	Pa.
Cynthia Ann O'Donnell	Mass.	Shirley Brewer Taylor	Md.
Elisabeth Jane O'Leary	S.C.	Virginia Gail Testa	N.J.
Jorge Vicente Ordenes	Va.	Lynda Ann Tetley	Va.
Danny James Palm	Va.	JoAnne Thompson	D.C.
John Joseph Pappalardo	N.Y.	Monica Eleanor Thomson	D.C.
Evangelyn Georgia Pappas	D.C.	Merrily Sparks Timmins	N.J.
Todd Ellis Pendleton	Md.	Catherine Gaughen Titus	Md.
(Special honors in Advertising Design)		Gary Richard Transtrum	Va.
William Richard Pepler	Canada	Maria Elenis Tsikerdanos	Md.
(Special honors in History)		Carole Anne Vaden	Md.
Marianne Gabrielle Perper	Conn.	Karl Nicholas Vartia	Va.
Martin Joseph Petersilla	Va.	Robert Roy Vawter, Jr.	Fla.
(Special honors in History)		Peter Jan Vennewitz	Oreg.
Margaret Stewart Philip	Va.	Annette Barbara Vock	N.J.
Joseph Baer Pincus	D.C.	Georganne Klee Vogel	N.Y.
(With distinction—Special honors in History)		Carroll Theresa Walker	Va.
Barbara Smith Presnall	Md.	James Kay Walters	Va.
Charles Michael Price	D.C.	Ann Pelham Walton	N.C.
James Gordon Priddy	D.C.	Sally R. Waltz	Md.
Willie Oldham Quade	Va.	David Ross Warner, Jr.	Md.
James K. Rankin, Jr.	Ga.	Dolores Wedemeyer	N.C.
Julia Marie Redding	Pa.	Carolyn M. Bragg Weitzman	Va.
John Richard Thomas Reeves	D.C.	John Remon Wenzel	Md.
Ruth Ellen Rendely	Md.	Georgia Ann Windley	Md.
Sonya Barsky Resnick	Md.	Ronald Harvey Wohl	Md.
Durward Leon Rhodes	Texas	Craig Borden Wolcott	N.J.
Louis David Richmond	N.J.	Jane Susan Wolf	Md.
Samuel Frederick Rindge	Calif.	Mary Lynda Wood	Va.
		Marcia Asher Wooding	N.C.
		Barbara Joan Zaubert	N.J.
		Patti Jane Ziegenhein	Conn.

## BACHELOR OF SCIENCE

FEBRUARY 22, 1965

*Walter Eric Barquist	Iowa	*Myron David Koris	N.J.
*Amelia Yancey Bond	N.C.	Virginia Langen	Md.
*Wilma M. Brown	Va.	Carol Lorraine Mullins	Va.
Rose Marie Chierici	Va.	*Edwin Mamoru Nemoto	Hawaii
*Linda Ann Davis	Md.	*Elizabeth Demetrius Pearson	Va.
*Sheldon Lewis Gerstenfeld	Md.	*Kyle W. Petersen	Idaho
*David Michael Goldberg	Va.	William Reed Whitten	Va.
Virginia McKenna Iandiorio	D.C.	Alden E. Yelmgren	Pa.
Philip Jaffe	N.Y.		

JUNE 6, 1965

Ronald Allan Altman	N.Y.	Eugene Jay Klein	N.Y.
Susan Montella Bland	Md.	Susan Ann Knadle	D.C.
Frank Wilhelm Bloss	D.C.	Thomas John Krupa	Pa.
David Michael Brickman	Va.	Francis Joseph Masci	N.Y.
Preston Baldwin Cannady, Jr.	Ala.	Rosalie Ann McCanner	D.C.
Donna Gray Clarke	Va.	Maralyn Louise Pickett	Va.
Julia Kane Cobb	Va.	Jack Paul Pinion	Md.
Kenneth Clark Cummings, Jr.	Calif.	James Douglas Potter	Conn.
Jaqueline Haydon Davis	D.C.	Joseph Henry Privitera	D.C.
Joan Ashley Ennis	Md.	Robert Martin Rogers	Fla.
Robert Lewis Evans	Va.	Raymond Monette Ross	Md.
Howard L. C. Fleck	Va.	Magdalene Corbett Schremp	Va.
Mildred Louise Garrison	D.C.	Beverly Diggs Sharp	D.C.
Robert David Goldhamer	Calif.	Joel Ira Shulman	D.C.
Dawn Gardner Goodman	Pa.	(With distinction—Special honors in Chemistry)	
Robert Gerald Heinze	Md.	Edward Joseph Tennyson, Jr.	D.C.
Paul Jan Horowitz	N.Y.	Abigail Gertrude Thornton	D.C.
Dee Anne Florence Houston	Va.	(With distinction)	
(With distinction)		Ann Barden Watson	Va.
Gaynor M. Hudson	Va.	Evangeline Stuart Wells	Md.
Allen Willis Jackson	D.C.	Richard Kenneth Wesley	D.C.
James Fred Johnson	D.C.	Gregory Luke Zalar	D.C.
Ernest Joseph Klein	D.C.		

## BACHELOR OF SCIENCE IN MEDICAL TECHNOLOGY

FEBRUARY 22, 1965

*Shelia Harriet Graham	D.C.	*Ellen Ottenheimer	Md.
Eva Liang Jones	Va.	*Barbara Doyle Sheaffer	Pa.
*Betty Evelyn Milstead	Md.		

JUNE 6, 1965

Ruth Joyce Japha	Va.
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## MASTER OF ARTS

FEBRUARY 22, 1965

*David Lyndle Ames	Mass.	*John William Baker	Pa.
A.B. 1961, The George Washington University		A.B. 1962, Dickinson College	
William H. Anderson	Va.	John Severens Barnett	N.Y.
B.S. 1959, University of Illinois		A.B. 1963, Stanford University	
*Degree awarded September 30, 1964.			

William Huffaker Browne A.B. 1951, University of Cincinnati	Md.	Evelyn Ellinger Lett A.B. 1962, Hollins College	Md.
*Cater Robertson Chamblee A.B. 1957, Wofford College	Va.	Dorothea Sophie Michelman A.B. 1962, The George Washington University	Va.
Christine Patton Chapman A.B. 1954, Wells College	D.C.	*Chapala Miri A.B. 1958, A.M. 1961, Gauhati University, India	India
John William Compton A.B. 1962, American University	Va.	Thomas Eugene Paine A.B. 1959, The George Washington University	Va.
Joanne Dempsey A.B. 1960, College of St. Elizabeth	D.C.	*David James Patterson A.B. 1959, Princeton University	Ohio
*Judith Ringgold Docca A.B. 1960, Pennsylvania State University	D.C.	Virginia Bergman Peters B.S. 1941, University of Minnesota	Va.
*Richard Frederick Dyer A.B., B.S. 1940, Southwest Missouri State College	Va.	*William Hoover Pixton A.B. 1959, The George Washington University	D.C.
*Peter Enis A.B. 1962, The George Washington University	D.C.	Carole Ann Rayburn A.B. 1961, American University	Md.
*Wade Charles Esserwein B.S. 1961, Loyola College	Md.	Edward Grant Ruestow B.F.A. 1959, M.F.A. 1960, University of Pennsylvania	D.C.
*Jay Alan Gandy A.B. 1959, Emory University	Va.	Wendy Schloss Schain A.B. 1960, Goucher College	Md.
John McMullan Gulick B.S. 1937, U.S. Military Academy	Maine	Marion Della Schravasande A.B. 1961, University of Michigan	D.C.
Marjorie Myers Halpin A.B. 1962, The George Washington University	Va.	Joan Marian Shagan A.B. 1960, University of Maryland	D.C.
*Barbara H. Hartmann A.B. 1958, Radcliffe College	D.C.	Arthur L. Singleton, Jr. A.B. 1949, University of Richmond	Va.
Sidney Robert Henderson A.B. 1963, The George Washington University	Nebr.	Scott Alexander Sullivan A.B. 1961, University of Virginia	Va.
Elizabeth Dwyer Hillenbrand A.B. 1950, Mt. Holyoke College	Md.	*Harrison Donald Troop A.B. 1949, The George Washington University	D.C.
Valerie Logan Hood A.B. 1960, Whitman College	Calif.	David Vernon Turnburke A.B. 1951, The George Washington University	D.C.
Gerald Leonard Kitay A.B. 1960, Brooklyn College	N.Y.	*Charles Bruce Updike A.B. 1961, Amherst College	N.Y.
Hilda Elizabeth Koontz A.B. 1935, Lynchburg College	Va.	Guy Roger Vanderpool A.B. 1956, Harding College	Md.
Warren John Kulas A.B. 1953, St. John's University, Minnesota	Minn.	*Nora Eisenbach Wagner A.B. 1959, Louisiana State University	Mexico
*Judith Jaffe Lefkowitz A.B. 1960, The George Washington University	D.C.		

#### JUNE 6, 1965

Suzanne Jeanne Abbott A.B. 1937, Western College for Women	Va.	Francis Fine A.B. 1963, The George Washington University	China
Ellen Susan Aronoff A.B. 1963, Barnard College	N.Y.	James Ronald Ford A.B. 1962, Lynchburg College	Va.
Thelma Kanatzar Burkhalter A.B. 1962, The George Washington University	Md.	Leon Jerome Friedman A.B. 1960, University of Hawaii	N.Y.
Charles Philip Corn A.B. 1958, Washington and Lee University	Ga.	Helen Christine Gallagher A.B. 1951, University of Rochester	D.C.
Duncan Lee Dieterly A.B. 1961, University of Cincinnati	Ohio	Diane Scrivene Gaston A.B. 1961, University of North Carolina	D.C.
Robert Arthur Dowd A.B. 1938, Harvard University	Va.	Robert Lee Goldstone A.B. 1948, College of William and Mary	D.C.
Jacqueline Hastings Dudley A.B. 1948, University of Maryland	Va.	A.M. 1953, University of Virginia	
May Paulette Edwards A.B. 1962, The George Washington University	D.C.	Don William Harrell A.B. 1959, Hendrix College	Ark.
Michael Angelo Falzone A.B. 1948, Columbia University	N.Y.	A.M. 1963, American University	
Carmen Lydia Felices A.B. 1960, University of Puerto Rico	D.C.	Frances Ford Harvey A.B. 1937, Stanford University	Fla.
		Gisela Blalik Huberman A.B. 1964, The George Washington University	D.C.

\*Degree awarded September 30, 1964.



Caroline Raifman Jaffe	D.C.	Anthony Lothrop Query	Md.
A.B. 1939, Brooklyn College		A.B. 1957, The George Washington University	
Mary Ann James	Okla.	Gisèle Joséphine Renson	Belgium
A.B. 1961, Immaculate Heart College		"Licence" in Philosophy 1956,	
Gilbert Roger Kaats	Md.	University of Liege, Belgium	
A.B. 1964, University of Maryland		Robert Jay Sahl	Pa.
Donna Mae Lerew	D.C.	A.B. 1963, Albright College	
A.B., Mus.B. 1952, University of Puget Sound		Bonnie Bartash Simon	Pa.
Mus.M. 1954, University of Rochester		A.B. 1962, New York University	
Aleta Bierschwale Lister	Texas	Ingrid Jacobsen Smith	Va.
A.B. 1941, Sul Ross State College		Diplom 1949, University of Heidelberg, Germany	
Maria C. Manos	Greece	Robert John Smith, Jr.	N.Y.
A.B. 1962, The George Washington University		A.B. 1963, Drew University	
Oliver LeRoy McCabe	Md.	Verna Mae Smith	Va.
A.B. 1963, University of Maryland		A.B. 1951, University of Missouri	
Robert Douglas McCullah	Md.	Roselyn Solo	D.C.
A.B. 1963, University of Maryland		A.B. 1959, City College, New York	
Anne Upton Miller	D.C.	Ruth B. Spodak	Md.
A.B. 1938, Radcliffe College		A.B. 1962, Pembroke College	
William Bateman Moore	Calif.	Inge Brigitte Wekerle	D.C.
A.B. 1961, The George Washington University		A.B. 1962, Trinity College	
Elaine Mary Pastis	D.C.	James Ogden Wells II	N.H.
A.B. 1961, The George Washington University		B.S. 1962, Tufts University	
		James Howard Wise	Md.
		A.B. 1963, Adelphi University	

## MASTER OF SCIENCE

FEBRUARY 22, 1965

*Yang-Ming Chu	China	Cornelius Glen McWright	Va.
B.S. 1958, University of Washington		A.B. 1952, Evansville College	
*Herbert Dagen	Md.	Alvin Louis Schreiber	D.C.
B.B.A. 1948, City College, New York		B.S. 1949, Johns Hopkins University	
Mohammad, Fatemi	Va.	*Andrew Simeon Stancioff	Md.
B.S. 1962, The George Washington University		B.S. 1961, The George Washington University	
David Hiner Hertig	Va.	*Laurence Richard Test	Va.
B.S. 1958, The George Washington University		B.S. 1962, Ursinus College	

JUNE 6, 1965

Peter Barney Berendsen	Md.	Michael Liebman	D.C.
B.S. 1960, St. Mary's College of California		A.B. 1955, New York University	
Kathryn Lee Calame	Mo.	Francis Peter Miller	Md.
B.S. 1962, University of Missouri		B.S. 1963, Manhattan College	
Frederick Joseph Collier	Va.	George William Mushrush	Pa.
B.S. 1958, Tufts University		B.S. 1962, Pennsylvania State College, Indiana	
Susan Lynn Gartner	N.Y.	Bernice Theresa Radovich	Va.
A.B. 1963, Goucher College		A.B. 1953, University of Kansas	
Homer Walter Jones, Jr.	Va.	Robert Raymond Rawlings, Jr.	Md.
M.E. 1947, M.S. 1950, Stevens Institute of Technology		A.B. 1961, Indiana University	
M.B.A. 1959, American University		Elizabeth Just Vosbeck	Va.
Leon B. Katchen	D.C.	B.B.A. 1947, University of Minnesota	
B.S. 1960, Queens College		Peter Joseph Wasilewski	Pa.
Edward William Kifer	Pa.	B.S. 1962, The George Washington University	
B.S. in Ed. 1960, Pennsylvania State College, Indiana			

\*Degree awarded September 30, 1964.

## MASTER OF FINE ARTS

JUNE 6, 1965

Frank Joseph Buckley  
A.B. 1963, The George Washington  
University

Va.

Donald Terence Netter  
A.B. 1953, A.M. 1955, Bellarmine  
College  
Lic.Theology 1961, Innsbruck  
University, Austria

D.C.

## School of Medicine

### DOCTOR OF MEDICINE

JUNE 6, 1965

Anthion Edward Anderson III	Utah	Ulla M-son Fortune	Calif.
Grant Pierce Bagley	Utah	William Patrick Fortune	Calif.
B.S. 1961, University of Utah		B.S. 1953, Springfield College	
Nicholas Anthony Balsano	N.Y.	Alan Edward Freeland	Ohio
B.S. 1960, Iona College		A.B. 1961, Johns Hopkins University	
Anthony David Blau	D.C.	Roger Jay Gemmen	Mich.
A.B. 1962, The George Washington University		A.B. 1957, University of Michigan	
John William Brady, Jr.	Md.	Thomas Hampton Goodridge	Md.
B.S. 1961, Marietta College		A.B. 1961, Dartmouth College	
John Wayne Branch	Md.	Richard Kuntz Goodstein	N.J.
B.S. 1961, University of Maryland		B.S. 1961, Michigan State University of Agriculture and Applied Science	
Robert Wayland Bright	D.C.	Barry Kenneth Gould	Md.
A.B. 1961, Ohio Wesleyan University		A.B. 1962, The George Washington University	
Francis Christian Burton, Jr.	Va.	Marlene Elisabeth Haffner	Md.
B.S. 1959, University of Utah		William Henry Joseph Haffner	N.J.
Robert Eugene Byler	Va.	(With distinction)	
A.B. 1962, Gettysburg College		A.B. 1961, Wesleyan University	
Edward Bernard Byrd	D.C.	Kent Milton Hardy	Utah
A.B. 1963, The George Washington University		Warren Carl Hazleton, Sr.	Maine
Richard Wright Carlisle	D.C.	John Rudolph Herr, Jr.	Pa.
Ronald Mason Cilley	Maine	B.S. 1961, Juniata College	
A.B. 1961, University of Maine		Paul Quay Herwick	Pa.
Peter Dirk Tom Clarisse	N.Y.	B.S. 1960, University of Pittsburgh	
A.B. 1961, Harpur College		Raymond George Herzinger	Idaho
John David Clough	Md.	B.S. 1961, Brigham Young University	
(With distinction)		John Allen Hicks	Calif.
B.S. 1961, The George Washington University		A.B. 1960, Occidental College	
Garret Harding Conner	Md.	Stanley Marvin Hirschberg	N.J.
A.B. 1959, Waynesburg College		A.B. 1961, Rutgers, The State University	
Sheridan Lynn Daines	Utah	Robert Dale Hodgell	Va.
B.S. 1964, University of Utah		A.B., B.S. in Med. Tech. 1959, University of Colorado	
Charles Young Davis	Va.	Cecil Rodwell Jonas	British Guiana
A.B. 1961, Johns Hopkins University		B.S. 1960, Howard University	
Michael Terrance Donahoe	Pa.	Thomas Llewellyn Jones, Jr.	Va.
Gerald Lynn Ellison	Va.	Sheldon Jay Kaplan	N.Y.
B.S. 1960, American University		A.B. 1962, Colgate University	
Donald Francis Farrell	Calif.	Stuart Lee Kaplan	D.C.
(With distinction)		A.B. 1961, The George Washington University	
William Jonas Fidler, Jr.	Va.	Andrew Hok-Ching Koo	China
A.B. 1961, Washington and Lee University		A.B. 1962, The George Washington University	
Robert George Filpi	Calif.	Norman Stuart Koval	Md.
B.S. 1961, University of the Pacific		B.S. 1961, The George Washington University	
John Louis Ford	Md.		
B.S. 1961, University of Maryland			

Carmen Mercedes Lopez-Molina	Puerto Rico	Lawrence Politz	D.C.
B.S. 1962, University of Puerto Rico		Marilyn Lewis Renfield (With distinction)	Va.
Mary Magdalene Lorentz	Md.	A.B. 1961, Duke University	
A.B. 1961, Trinity College		Jerry Bain Rogers	Mo.
William Charles Mast	Ariz.	B.S. 1960, University of Maryland	
B.S. 1961, University of Arizona		Peter John Runge	N.Y.
Anthony James Mathios	Calif.	B.S. 1961, Villanova University	
Marvin Israel Matz	N.Y.	Delbert Lyle Secrist, Jr.	Ariz.
(With distinction)		A.B. 1961, Stanford University	
B.S. 1957, City College, New York		John Christopher Campbell Seymour	Md.
D.D.S. 1961, New York University		A.B. 1961, Brown University	
Daniel Sylvester Mazzuchi	Md.	Harold Hastings Shively, Jr.	Conn.
B.S. 1961, College of the Holy Cross		A.B. 1959, Wesleyan University	
Bud Holland McDougal	Idaho	Roger Ward Steinbrenner	Calif.
B.S. 1961, University of Idaho		A.B. 1962, University of California	
Robert Dean McElhane	Wyo.	Michael B. Stemerma	N.Y.
A.B. 1961, Central Washington State College		A.B. 1961, University of Rochester	
David William McPhetres	D.C.	Andrew Julius Stiber	N.J.
A.B. 1961, Whittier College		A.B. 1961, University of Michigan	
James Hartley Mering III	Pa.	Donald Frank Stonefeld	Md.
David Kent Millward	N.Y.	B.S. 1961, Ohio State University	
B.S. 1961, Tufts University		Carl Stones	Idaho
John Hill Mitchell	Md.	George Weldon Strother	Pa.
A.B. 1961, Ohio Wesleyan University		B.S. 1960, University of Pittsburgh	
Robert Lionel Moesinger	Va.	Paul Conrad Taylor	Ohio
B.S. 1962, University of Utah		A.B. 1961, Miami University	
Gerald Gambs Morris	Va.	Charles John Tegtmeyer	D.C.
A.B. 1962, The George Washington University		A.B. 1961, Colgate University	
Roy Sheffler Musick, Jr.	D.C.	Arthur Richard Ugel	D.C.
B.S. 1961, American University		B.S. 1961, The George Washington University	
Maureen Kathleen Nixon	N.Y.	Walter Victor Rudolph Vieweg	Va.
A.B. 1961, Catholic University of America		B.S. 1957, U.S. Naval Academy	
Robert Paul Odenwald, Jr.	D.C.	Ruth Pomerantz Waldbaum	N.Y.
B.S. 1961, College of the Holy Cross		A.B. 1961, Brooklyn College	
Thomas Michael O'Neill	D.C.	Harry Maurice Walen	Md.
A.B. 1961, Catholic University of America		B.S. 1961, University of Maryland	
David Walter Oxley	Va.	William Budd Warden	Md.
A.B. 1961, Drake University		A.B. 1962, The George Washington University	
Richard Dominick Paolillo	Md.	Allen Collier White	Calif.
B.S. 1961, College of William and Mary		A.B. 1961, Occidental College	
Elaine Elyshia Pass	Conn.	Robert Rudolf Wolf	N.J.
B.S. 1960, Tufts University		A.B. 1961, Rutgers, The State University	

## The Law School

### BACHELOR OF LAWS

FEBRUARY 22, 1965

Anna Pierrepont Angier	Tenn.	Mary Elinor Thompson Beach	Va.
A.B. 1944, Maryville College of the Sacred Heart		B.S. 1957, Ohio State University	
James Monteith Austin	Va.	M.B.A. 1961, The George Washington University	
A.B. in Govt. 1957, The George Washington University		*Thomas Emmert Beall, Jr.	D.C.
*Melvin Barron	Mass.	B.S. 1960, University of Maryland	
A.B. 1961, Boston University		*Richard Michael Beck	Va.
		B.M.E. 1960, Rensselaer Polytechnic Institute	

\*Degree awarded September 30, 1964.



Townsend Mikell Belser, Jr. B.Ch.E. 1958, Georgia Institute of Technology	S.C.	William Spencer Holcomb A.B. 1957, Illinois Wesleyan University	Md.
*Ingram Thomas Benson A.B. 1936, Carleton College	Va.	Ralph Logan Houser B.S. in Com. 1935, University of Iowa	Va.
*Gerald Henry Bjorge B.S. in Ch.E. 1959, Northwestern University M.S. in Eng. 1962, Princeton University	Va.	Joseph Samuel Iandiorio B.E.E. 1959, Villanova University	D.C.
*Sara Elizabeth Bjorge B.S. in H.E. and R.Sc. 1959, Iowa State University of Science and Technology	Va.	*Patrick Henry James B.B.A. 1962, University of Oklahoma	Okla.
Ray Samuel Bolze A.B. 1957, Pennsylvania State University	Va.	*William Mark Jones A.B. 1961, Texas Christian University	Texas
David Crawford Carvey A.B. 1955, Pennsylvania State University	Md.	*Stan Carl Kaiman B.S. in M.E. 1961, University of Nebraska	Md.
*James Edward Casey B.S. in Com. 1957, Roosevelt University M.B.A. 1957, University of Chicago	Md.	*Sylvan Lewis Katz B.S. 1943, University of Maryland	D.C.
*James Mathew Catchick A.B. 1961, University of Michigan	Md.	*George LeRoy Kensinger, Jr. B.E. 1959, Yale University	Pa.
*Lynn Bergman Clausen A.B. 1956, Michigan State University of Agriculture and Applied Science	Va.	*Thomas Glenn Keough B.S. 1961, South Dakota State College of Agriculture and Mechanic Arts	Va.
*Michael Clark Conlon A.B. 1954, Lafayette College Lawrence Franklin Costill, Jr. B.S. in B.A. 1952, Drexel Institute of Technology	Va.	*Don Morris Kerr A.B., B.S. in Ch.E. 1960, Texas Technological College	Va.
Dorris Caldwell Daniel, Jr. A.B. 1957, American University	N.J.	Vibert Lorraine Kesler, Jr. B.S. 1960, University of Utah	Utah
*John Glandon Davies A.B. 1960, Yale University Barrister at Law 1963, Lincoln's Inn, England	Va.	Robert William Kinzie B.S. 1958, A.M. 1961, University of Maryland	Md.
Raymond Aloysius Driscoll A.B. 1939, St. John's University, New York	N.J.	Roy Masamichi Kodani A.B. 1961, Lafayette College	Hawaii
*Melvin Jerome Ehrenfreund A.B. 1960, University of Connecticut	Tenn.	Peter Hajime Kondo B.S. 1957, Michigan State University of Agriculture and Applied Science	Va.
Larry William Evans B.S. in Ch.E. 1961, Purdue University	D.C.	John Michael Kucharaki B.E.E. 1958, Marquette University	Md.
Francis Rayome Filiatreau, Jr. B.C.E. 1957, Clarkson College of Technology	Md.	*Elliot Andor Lackenbach B.S.E. (M.E.) 1962, University of Michigan	Va.
Eugene Jay Finkel A.B. 1952, Swarthmore College A.M. 1961, The George Washington University	Md.	*Robert Goodman Lake B.S. 1945, U.S. Military Academy M.B.A. 1950, University of Chicago	Mich.
Paul Waring Fish B.E.E. 1959, M.E.E. 1961, Catholic University of America	N.Y.	Jeanette Mikkelsen Lamar A.B. 1962, Chatham College	Va.
Gladys Leech Fishel A.B. 1954, A.M. 1956, The George Washington University	Va.	*Raymond Augustus Lamb B.S. in B.A. 1962, University of North Dakota	N.D.
Lawrence Eugene Forgy, Jr. A.B. 1961, The George Washington University	N.Y.	Arthur Leonard Liberman A.B. 1955, B.S. in Ch.E. 1956, M.S. in Ch.E. 1957, Columbia University	Va.
*Herbert Lee Gatewood B.S. in Ch.E. 1953, Rose Polytechnic Institute	D.C.	Randall Gale Litton B.S. in E.E. 1961, University of Idaho	Idaho
Wallace Gary Goodson B.S. 1961, Brigham Young University	Md.	*James Mitchell Llewellyn, Jr. B.S. in Aero. Eng. 1956, St. Louis University	Va.
Richard David Grauer B.S.E. 1958, University of Michigan M.Auto Eng. 1960, Chrysler Institute of Engineering	Va.	*Frank Anthony Lukasik B.S. 1958, Rhode Island School of Design	Va.
Gordon Holte Hagen A.B. 1957, St. Olaf College	Ky.	Norman Burleigh Lynch (With distinction) B.S. 1956, U.S. Coast Guard Academy	N.J.
	Va.	Robert Owen Marritz A.B. 1960, B.S. in E.E. 1961, University of Pennsylvania	N.J.
	Va.	John William Matthews A.B. 1962, Duke University	Va.
	Va.	*Paul Ambrose McGuckian A.B. 1960, Dickinson College	Md.
	Va.	*Harold Wayne Messenger B.B.A. 1957, University of Oklahoma	Okla.
	D.C.	Glenn Carlyle Michel A.B. 1962, The George Washington University	Md.
	D.C.	Tim Richard Miles B.S.E. 1959, Vanderbilt University	D.C.

\*Degree awarded September 30, 1964.

*James Judson Millard B.S. in B.A. 1953, Georgetown University	Va.	*Joseph Hal Shealy A.B. 1961, Duke University	Md.
*John Tipton Miller A.B. 1957, East Tennessee State University	Va.	M. Howard Silverstein B.S. 1959, Northeastern University	Va.
*Stanley Ross Miller B.S. in M.E., B.S. in B.A. 1961, Kansas State University of Agriculture and Applied Science	Kans.	*Al Lawrence Smith B.S. 1957, Pennsylvania State University	Md.
William Mitchell Moran A.B. 1959, University of Florida	D.C.	*Thomas Lee Steffen B.S. 1957, University of Utah	Utah
David Lee Moseley B.S. in M.E. 1960, University of Texas	Texas	David George Stevenson A.B. 1961, Dickinson College	N.J.
Robert Arthur Niles B.S. in Mil. Sc. 1962, University of Maryland	Va.	Sol Benjamin Stias B.S. 1956, University of Nebraska	Md.
*Robert Leon Oswald A.B. 1960, University of Maryland	Md.	*Robert Ray Stone, Jr. A.B. 1958, William Jewell College	Va.
Noel Alfred Pasternak A.B. 1958, Colgate University	Md.	Lawrence Robert Sullivan B.S. 1959, Pennsylvania State University	Va.
M.B.A. 1959, Columbia University		Sigurd Ernest Swenson B.S.C. 1940, University of North Dakota	Texas
Sheldon Michael Pincus A.B. 1961, University of Maryland	Md.	Gary Tabak B.S. in E.E. 1961, University of Pennsylvania	Pa.
Robert Lee Price B.S. 1959, Morris Harvey College	Va.	*William Albert Van Santen, Jr. B.S. in Ch.E. 1961, Illinois Institute of Technology	Va.
James Mackie Keyback B.S. 1943, U.S. Naval Academy	Md.	Kenneth Wayne Vernon B.S. 1959, University of Texas	Texas
William Carter Reynolds B.S. in M.E. 1957, Swarthmore College	Va.	*Anderson Wallace, Jr. A.B. 1962, The George Washington University	Pa.
*John David Rice B.S. 1958, Utah State University of Agriculture and Applied Science	Utah	David Mardan Weitzman B.S. 1959, University of Chicago	Va.
Orvil Malcolm Roetman A.B. 1950, University of Minnesota	Alaska	*Marion Wayne Western B.S. 1961, Utah State University of Agriculture and Applied Science	Utah
B.S. in Aero.Eng. 1955, U.S. Naval Postgraduate School		Leonard Allen White B.M.E. 1959, The George Washington University	Md.
Michael Oliver Sawyer A.B. 1941, A.M. 1947, Ph.D. 1952, Syracuse University	N.Y.	Edwin Arnold Williams A.B. 1961, Oklahoma State University of Agriculture and Applied Science	D.C.
John Paul Scherlach B.S. in E.E. 1960, West Virginia University	Va.	*James Austin Williams B.S. in C.E. 1958, University of Nebraska	Nebr.
*Charles Edwin Schurman B.S. 1950, U.S. Merchant Marine Academy	Va.	David Erwin Winer B.S. 1956, Vanderbilt University	Va.
B.S. 1951, University of California		*Joseph Golden Wise B.S. 1960, Brigham Young University	Idaho

## JUNE 6, 1965

Allen Sidney Alpert B.I.E. 1961, University of Florida	Md.	David Malcolm Bond B.S. 1962, University of Maryland	Md.
Glenn Stuart Arendsen B.S. in Ch.E. 1958, Michigan College of Mining and Technology	Va.	George Robert Borsari, Jr. B.S. 1962, Virginia Polytechnic Institute	D.C.
M.Auto. Eng. 1960, Chrysler Institute of Engineering		William Dennis Brack A.B. 1962, Washington and Lee University	Texas
Phillip Russel Arvidson B.S. in M.E. 1961, Oklahoma State University of Agriculture and Applied Science	Va.	Jerry Herbert Brenner B.S. 1962, Pennsylvania State University	Md.
John Randolph Ayre A.B. 1962, University of Utah	Utah	Burton Gearhart Bridgens A.B. 1941, University of Iowa	Md.
Sheldon M. Bender B.M.E. 1961, City College, New York	Md.	David William Brinkman B.Ch.E. 1961, Rensselaer Polytechnic Institute	Va.
Robert Clarence Bennett, Jr. A.B. 1961, Texas Agriculture and Mechanical University	Texas	Gary Girwin Bullis A.B. 1962, University of Nevada	Nev.
John Charles Bennison A.B. 1961, Pomona College	N.D.	Donald Stuart Cameron A.B. 1962, Johns Hopkins University	N.Y.
Allen J. Berk A.B. 1962, Brooklyn College	Md.	Ernest Grey Cammack, Jr. B.S. in I.M. 1959, Georgia Institute of Technology	Va.

\*Degree awarded September 30, 1964.

Leon Chorkavy, Jr. B.S. 1962, New York University	N.J.	Philip Robert Hochberg B.S. 1961, Syracuse University	Md.
Robert Brewster Clark A.B. 1949, Harvard University	Mass.	Charles Leroy Honey, Jr. A.B. 1960, University of Arkansas	Ark.
William Marvin Cohen A.B. 1962, Michigan State University of Agriculture and Applied Science	Va.	William Lynn Hossner A.B. 1963, University of Idaho	Idaho
Robert Francis Comeau B.S. 1957, U.S. Military Academy	Mass.	Richard Scott Hudgins A.B. 1955, The George Washington University	D.C.
David Rader Cooper A.B. 1962, Pennsylvania State University	Va.	Lawrence Alan Huff A.B. 1961, Stanford University	Va.
John Harding Coult B.S. in E.E. 1961, Pennsylvania State University	Va.	Robert Russell Humphreys A.B. 1959, University of Washington	Va.
Merritt Singleton Deltz, Jr. A.B. 1961, University of Kentucky	Va.	Raymond Charles Johnson B.S. 1958, Wisconsin State College, Eau Claire	Va.
John Ward Dewhirst B.I.E. 1960, Georgia Institute of Technology	Va.	Stanley Mark Karlin A.B. 1962, University of Maryland	Md.
Edward Donald Dreyfus B.S. in E.E. 1960, Washington University	Md.	Steven Martin Katz B.S. 1962, University of Maryland	Md.
Hollis Giesemann Duensing A.B. 1959, The George Washington University	Ill.	Elsa R. Kaufmann A.B. 1952, Wellesley College	Md.
Roger Samuel Dutson B.S. 1962, Utah State University of Agriculture and Applied Science	Utah	John Ward Kerr, Jr. B.B.A. 1960, College of William and Mary	Va.
Robert Marvin Elliott B.S. 1961, Pennsylvania State University	Va.	Barry Jay Kesselman B.S. 1962, Pennsylvania State University	Md.
Paul Oliver Fehnel, Jr. B.S. in Phar. 1954, Temple University	Md.	Morton Richard Kimmel A.B. 1962, Temple University	Del.
Howard William Feldman, Jr. A.B. 1960, University of Rochester	D.C.	Gary Stanley Kindness B.S. in E.E. 1961, University of Wisconsin	Wis.
Stuart Martin Fishbein A.B. 1962, University of Florida	Fla.	Marshall Aaron Lerner B.S. in E.E. 1962, Newark College of Engineering	N.J.
Hiram L. Fong, Jr. A.B. 1962, Lafayette College	Hawaii	Henry Joseph Levine B.S. 1952, Lehigh University	Pa.
Martin Henry Freeman A.B., B.S. in M.E., 1961, Lehigh University	Va.	Michael Samuel Levy A.B. 1962, University of Vermont	N.Y.
Russell John Gallagher A.B. 1962, University of California, Berkeley	Va.	Sam Page Lockard A.B. 1962, The George Washington University	W. Va.
Jon Carl Gealow B.S. in E.E. 1959, M.S. in E.E. 1960, University of Illinois	Va.	Thomas Gordon Loman A.B. 1962, Pennsylvania State University	N.J.
Ronald Mayer Goldman B.S. in E.E. 1961, Illinois Institute of Technology	Va.	Philip Frank Margulies B.S. 1962, New York University	N.J.
Carter H. Golembe A.B. 1946, A.M. 1947, Ph.D. 1952, Columbia University	Va.	Owen Dennis Marjama B.S.E. 1958, Michigan College of Mining and Technology	Va.
Michael Edward Goodman A.B. 1962, Rutgers, The State University	N.J.	M.S.E. 1961, Wayne State University	
Timothy Geddes Greene A.B. 1961, University of Idaho	Md.	Harold O. Miller A.B. 1960, Lebanon Valley College	Va.
David Alan Greenlee B.I.E. 1961, Georgia Institute of Technology	Va.	Michael Joseph Miller A.B. 1962, Marietta College	Md.
Gerald Paul Grossberg A.B. 1962, Pennsylvania State University	D.C.	Melvyn Irwin Monzack B.S. 1962, University of Rhode Island	R.I.
Robin Hood Harbin A.B. 1962, University of Alabama	D.C.	Robert Lee Morrison B.S. 1956, North Carolina State University	Md.
Timothy Wayne Healy B.S. 1962, Utah State University of Agriculture and Applied Science	Utah	Stephen Edward Moss B.B.A. 1962, Baldwin-Wallace College	Md.
Edwin August Heisler B.S. 1957, Tufts University	Va.	Robert Clifford Nielsen A.B. 1962, Trinity College	Conn.
John William Henderson A.B. 1958, The George Washington University	Va.	Edward Dennis O'Connor B.S. in M.E. 1961, University of Notre Dame	Va.
Michael Hughes Heneghan B.S. 1962, College of the Holy Cross	Conn.	Douglas Eugene Olson B.S. 1959, M.S. 1960, University of Wisconsin	Va.
Francis Bradford Henry B.S. in M.E. 1958, University of South Carolina	Va.	Paul Leonard Pascal A.B. 1961, University of Maryland	Md.
Joseph Ira Hirsch B.S. in Ch.E. 1961, Purdue University	Ohio	David Enoch Pitchenik B.E.E. 1962, University of Virginia	N.Y.
		Thomas Philip Powers A.B. 1959, University of Buffalo	Md.
		Morton Herbert Press A.B. in Govt. 1962, The George Washington University	D.C.
		John Elwood Preston A.B. 1962, Ohio University	Ohio



Alan Kent Quayle Richards	Md.	Roy Howard Stanton	N.Y.
A.B. 1962, University of Maryland		A.B. 1963, University of Vermont	
Gerald Brian Riess	Wash.	Walter Horton Sweeney	D.C.
A.B. 1962, Whitman College		A.B. 1960, American University	
John Taylor Riggs	Md.	John Terry Tansey	D.C.
A.B. 1956, Pennsylvania State University		A.B. 1962, University of Cincinnati	
James Robertson	Va.	Frank Harding Thomson	Va.
A.B. 1959, Princeton University		B.S. 1962, Clarkson College of Technology	
Stanley Frank Rodbell	Md.	James Max Thomson	Va.
B.B.A. 1962, University of Michigan		B.S. in E.E. 1960, University of Idaho	
Donald Allen Rowe	D.C.	William Cecil Townsend	Va.
B.S. in C.E. 1960, University of Wisconsin		B.S. in Met. Eng. 1958, University of Pittsburgh	
William Ray Scanlin	Pa.	Jerry Dean Voight	D.C.
A.B. 1962, University of Notre Dame		B.S. in Ch.E. 1959, Montana State College	
Dana Murray Schmidt	Ill.	Mary Elizabeth Wahrenbrock	Va.
B.S.E. 1962, University of Michigan		A.B. 1962, Randolph-Macon Woman's College	
Charles Michael Schutzman	N.Y.	Marvin Mitchell Waldman	D.C.
B.Ch.E. 1959, Rensselaer Polytechnic Institute		A.B. 1962, The George Washington University	
John Thomas Schwieters	Ind.	Gomer Winston Walters	D.C.
B.S. in B.A. 1962, Georgetown University		B.E. 1960, Yale University	
Jay Louis Seitchik	Md.	Richard Alvord Ward	Va.
B.S. in M.E. 1961, Drexel Institute of Technology		A.B. 1961, The George Washington University	
Daniel Holland Shaner	Va.	Edwin Martin Weiss	Va.
A.B. 1962, Hampden-Sydney College		A.B. 1948, Ohio State University	
James Burt Siemens	D.C.	M.S. 1951, University of Wisconsin	
A.B. 1957, St. John's College, Maryland		Frederick Lee Welther	Ky.
John M. Spurgeon	Va.	A.B. 1960, Duke University	
B.S. 1959, Oklahoma State University of Agriculture and Applied Science		Arnold Rodman Westerman	Md.
		A.B. 1962, University of Maryland	

## JURIS DOCTOR

FEBRUARY 22, 1965

Joseph Edward Szabo	Va.
B.E.E. 1956, McGill University	

JUNE 6, 1965

Dulcey Ann Brown	Va.
A.B. 1957, The George Washington University	

## Graduate School of Public Law

### MASTER OF LAWS

FEBRUARY 22, 1965

Mervyn Ira Aronoff	D.C.	Albert James Clark	Va.
A.B. 1959, University of Michigan		LL.B. 1936, B.S. 1939, Fordham University	
LL.B. 1962, Harvard University		William Arthur Crawford, Jr.	Ga.
Joseph Jay Baker	Ind.	LL.B. 1949, Mercer University	
B.E.E. 1960, LL.B. 1963, Catholic University of America		Salvatore Leonard Franchino	D.C.
		A.B. 1957, Columbia University	
		LL.B. 1960, Fordham University	

Alan Jerome Gould LL.B. 1954, State University of New York	Va.	Herman Gordon Shields B.I.E. 1954, University of Florida LL.B. 1961, University of Utah	Va.
*Mack Kenneth Greenberg LL.B. 1927, Boston University	Mass.	*Robert J. Staal A.B. 1956, Calvin College	Va.
*Walter Thomas Margetts III A.B. 1959, Dartmouth College LL.B. 1962, University of Virginia	N.J.	A.M. 1958, University of Michigan LL.B. 1961, University of Miami	

## JUNE 6, 1965

John Gibbons Adams LL.B., 1935, University of South Dakota	S.D.	Mervyn Hamburg B.S. 1958, LL.B. 1961, Temple University	Pa.
Lawrence Herman Averill, Jr. A.B., 1962, Indiana University LL.B., 1964, American University	Md.	Alexander McMurray Hearn LL.B. 1951, The George Washington University	Mo.
Henry Anthony Cretella B.S. 1949, U.S. Coast Guard Academy LL.B. 1956, Georgetown University	Mich.	James Daniel McCarthy, Jr. B.S. in B.A. 1954, LL.B. 1958, Wayne State University	Va.
John Luis Antonio de Passalacqua A.B. 1961, University of Puerto Rico LL.B. 1964, Catholic University of Puerto Rico	Puerto Rico	Charles Michael Pallesen, J. A.B. 1959, Doane College LL.B. 1962, University of Nebraska	Nebr.
Rodolphe Jean Alexandre de Seife A.B. 1943, Collège de la Ste. Famille, Egypt LL.B. 1955, Catholic University of America	N.J.	John Hayes Reese B.B.A., LL.B. 1954, Southern Methodist University	Texas
Marion Albert Figinski A.B. 1959, Johns Hopkins University LL.B. 1962, University of Maryland	Md.	Donald Cleveland Turpen B.S. 1959, University of New Mexico J.D. 1963, The George Washington University	N.M.
		Bernard Keith Vetter A.B. 1962, LL.B. 1964, Louisiana State University	La.

## MASTER OF COMPARATIVE LAW

### FEBRUARY 22, 1965

*Awni Mohammad Al Fakhri LL.B. 1947, Baghdad University, Iraq	Iraq	*Kim Lay Tjoa LL.B. 1962, University of Indonesia, Indonesia	Indonesia
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## JUNE 6, 1965

Hassan Mahmoud Babiker LL.B. 1954, Cairo University, Egypt	Sudan	Bernard F. W. Eschenbach Rechtsreferendar 1964, Cologne, Germany	Germany
Mario d'Urso Dottore in Giurisprudenza 1963, Università degli Studi di Palermo, Italy	Italy		

## MASTER OF COMPARATIVE LAW (American Practice)

### FEBRUARY 22, 1965

*Arun Kumar Chhabra LL.B. 1957, University of the Punjab	Va.	Gunter Heinrich von Conrad S.J.D. 1963, Cologne University, Germany	Va.
*Edward Emil Scheer Doctor of Universal Law 1931, Pazmany Peter University, Hungary	Va.		

\*Degree awarded September 30, 1964.

JUNE 6, 1965

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Charles Ellis Lister	Fla.
A.B. 1960, Harvard University	
A.B. 1962, B.C.L. 1963, University of Oxford, England	

**DOCTOR OF JURIDICAL SCIENCE**

FEBRUARY 22, 1965

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Jerome Morenoff	N.Y.
A.B. 1958, B.S. in E.E. 1959, M.S. in E.E. 1960, Columbia University	
J.D. 1963, The George Washington University	
Dissertation: "Reconnaissance in Air Space and Outer Space: A Legal Analysis and Prognosis"	

JUNE 6, 1965

---

Michael Francis Noone, Jr.	N.J.
B.S. in F.S. 1955, LL.B. 1957, LL.M. 1962, Georgetown University	
Dissertation: "Legal Problems of Military Nonappropriated Fund Activities"	

**School of Engineering and Applied Science**

**BACHELOR OF CIVIL ENGINEERING**

FEBRUARY 22, 1965

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*Chandrakant Premchand Dodhia	Kenya
-------------------------------	-------

JUNE 6, 1965

---

John J. Broaddus	D.C.	Khalilollah Khozeimeh	D.C.
Jaime Doria-Medina	Bolivia	Hassan Mirshah Valad	Iran

**BACHELOR OF ELECTRICAL ENGINEERING**

FEBRUARY 22, 1965

---

Walter James Crater, Jr.	Va.	Janko Jackson	D.C.
B.S. 1961, Washington and Lee University		A.B. 1958, Harvard University	
*Abdul Qadir Haideri	Pakistan	Arthur James Kendall	Md.
B.S. 1954, Agra University, India		Adel Mahmoud Labib	Va.
M.S. 1956, University of Karachi, Pakistan		*Wasyf Ostafie	Md.
		Joesuke Joe Toda	D.C.

\*Degree awarded September 30, 1964.



JUNE 6, 1965

Shanti Priya Chakravarty	India	Douglas Edward Mac Donald	D.C.
Robert Paul Chew, Jr.	Md.	Joseph Francis Martino, Jr.	Md.
Alessandro Chierici	Va.	David Louis Prisznick	Va.
William Albert Daniel	Va.	George W. Saxton	Md.
Elton D. Davis	Va.	Raymond Joseph Stanekenas	Pa.
Rudolph Montgomery Decatur, Jr.	Va.	Vytas Albert Tarulis	D.C.
Harold Stuart Freed	D.C.	John Manning Wehrung	Mich.
Jeffrey Bruce Goldman	Md.	David Lee Wong	D.C.
Philip Bernard Kaplan	D.C.		
(With distinction)			

## BACHELOR OF MECHANICAL ENGINEERING

FEBRUARY 22, 1965

*Raghu Chari	India	*Thomas Norman Tinley	Va.
Reginald Stuart Mitchell	Va.		

JUNE 6, 1965

John Dutton Bauersfeld	D.C.	William Edmund Massey	D.C.
Joseph August Brinkmoeller	Va.	Frank Moy	D.C.
Martin Roger Hum	D.C.	Douglas Bruce Uthus	Va.
Norman Joseph Makowski	Va.		

## BACHELOR OF SCIENCE IN ENGINEERING

FEBRUARY 22, 1965

*Martin Joseph Costello	Va.	*Isaac Marcos Herskowitz	Colombia
-------------------------	-----	--------------------------	----------

JUNE 6, 1965

Thomas Power Dillon, Jr.	Va.	Morton Frank Taragin	D.C.
Stephen Sandweiss Gray	Mass.	(With distinction)	
Lawrence Joseph Nivert	D.C.		

## BACHELOR OF SCIENCE (CIVIL ENGINEERING)

FEBRUARY 22, 1965

*Stanwood Francis Armington	R.I.	Ely Gerson Fishlowitz	Md.
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JUNE 6, 1965

Kenneth Lanier Donnelly	Md.	James Daniel Raber	D.C.
-------------------------	-----	--------------------	------

## BACHELOR OF SCIENCE (COMMUNICATIONS)

JUNE 6, 1965

Herbert Elmer Dawson	Va.	Robert Joseph Maichle	Md.
----------------------	-----	-----------------------	-----

\*Degree awarded September 30, 1964

**BACHELOR OF SCIENCE (ELECTRICAL ENGINEERING)**

**FEBRUARY 22, 1965**

Hugh Barrett Kaufman Va.

**BACHELOR OF SCIENCE (ELECTRONICS)**

**FEBRUARY 22, 1965**

\*Louis Joseph Boezi D.C. Michael J. Rivers Va.  
Jean Daniel Lavanceau Md. \*Louis Paul Wagman Md.

**JUNE 6, 1965**

Gordon Earle Davison Va. Donald Philip Eckel D.C.

**BACHELOR OF SCIENCE (ENGINEERING SCIENCE)**

**JUNE 6, 1965**

Dillon Foster Scofield Va.

**BACHELOR OF SCIENCE (MACHINE COMPUTERS)**

**FEBRUARY 22, 1965**

\*John Andrew Mahoney Md.

**BACHELOR OF SCIENCE (MECHANICAL ENGINEERING)**

**FEBRUARY 22, 1965**

Satish Kumar Bagai India

**JUNE 6, 1965**

Millard Edward Carr Va. George Edward Miller Md.  
Binnya Maw Burma

**BACHELOR OF SCIENCE (THEORETICAL AND APPLIED MECHANICS)**

**FEBRUARY 22, 1965**

Charles St. John Herbert III Md.

\*Degree awarded September 30, 1964.

# MASTER OF ENGINEERING ADMINISTRATION

FEBRUARY 22, 1965

Rolph Albert	Md.	Stewart Wilburn McCormick	Va.
B.M.E. 1956, North Carolina State College		B.S. 1951, Georgia Institute of Technology	
*Bert Benton Aton	Ky.	M.S. 1955, University of Washington	
B.S. 1950, U.S. Military Academy		Angus Dougald McEachen III	Calif.
Robert Joseph Byer	Md.	B.S. 1956, U.S. Naval Academy	
B.S. 1954, Massachusetts Institute of Technology		B.S. in E.E. 1962, U.S. Naval Postgraduate School	
*Julian Nance Carsey	Md.	Howard E. Minter, Jr.	N.Y.
B.S. in Ch.E., B.B.A. 1958, Texas Agricultural and Mechanical College		B.S. 1957, U.S. Naval Academy	
Anthony Cilento	Md.	Ralph Connor Morehead	Md.
B.S. in E.E. 1959, Newark College of Engineering		B.S. 1951, U.S. Naval Academy	
Richard Hugh Davis	Texas	Thomas Richard O'Neil	Md.
B.S. in Ch.E. 1955, University of Texas		B.S. in C.E. 1960, Villanova University	
Aber Harry Dearfield		Robert Julian Pauly	Va.
B.S. in E.E. 1949, Carnegie Institute of Technology	Md.	B.A.E. 1958, University of Virginia	
Arthur Stuart Distler	Va.	John Manion Porter	Va.
B.M.E. 1956, Syracuse University		B.S. 1955, University of Massachusetts	
Daniel Augustus Dreyfus	Va.	*Gregory Sutton Rambo	Pa.
B.C.E. 1957, The George Washington University		B.S. in E.E. 1961, Virginia Polytechnic Institute	
Wayne Lee Edwards	Ohio	John Ratway	Va.
B.S. 1941, U.S. Naval Academy		B.S. 1949, Muhlenberg College	
Herbert R. Gamache	Md.	Charles Carl Rogers, Jr.	Va.
B.E.S. 1958, Johns Hopkins University		B.I.E. 1956, Georgia Institute of Technology	
Ralph Palma Gray	Md.	Peter Laurence Shadgett	Md.
B.Aero.Eng. 1951, Rensselaer Polytechnic Institute		B.I.E. 1958, Georgia Institute of Technology	
*Truman Lewis Griswold	Ohio	Theodore Milan Slabey	Pa.
Aero.Eng. 1949, University of Cincinnati		A.B. 1948, Washington and Jefferson College	
Emil Peter Iaconis	Va.	Richard Lee Studley	Md.
B.E.E. 1957, Polytechnic Institute of Brooklyn		B.S. in M.E. 1958, Drexel Institute of Technology	
Robert MacKay Jameson	Va.	Americo James Vescovi	N.J.
B.S. 1942, Pennsylvania State University		B.S. 1942, U.S. Naval Academy	
Allen Marshall Jox	Md.	B.S. 1952, U.S. Naval Postgraduate School	
B.S. in E.E. 1959, Valparaiso University		William Coulter Wanbaugh	Md.
Joseph Michael Kaputa	Va.	B.S. in E.E. 1954, University of Maryland	
B.S. in E.E. 1959, Carnegie Institute of Technology		Edwin Kirby Wharton	Md.
Caspar Michael Kasparian	Md.	B.S. 1956, U.S. Naval Academy	
B.C.E. 1953, New York University		George Morgan Williams	Va.
John Paul Keen	Va.	A.B. 1942, University of West Virginia	
B.S. in Eng. 1959, The George Washington University		Scott Farley Williamson	Md.
*William Edwin Kriegsman	Va.	A.B. 1963, The George Washington University	
A.B. 1953, University of Rochester		Rex Wilson	Ark.
Donald William Mantay	Va.	B.S. in A.E. 1961, U.S. Naval Postgraduate School	
B.S. in M.E. 1958, Valparaiso University		Gordon Evans Wood	Va.
Victor Dominic Marone	Md.	B.Ch.E. 1957, University of Delaware	
B.S. in M.E. 1959, University of Connecticut		Noble Davis Wrinkle, Jr.	Ill.
		B.S. 1959, Virginia Polytechnic Institute	
		Edwin Allen Zura	Md.
		B.E.E. 1957, City College, New York	

JUNE 6, 1965

John B. Adams, Jr.	Va.	Danforth E. Ball III	Ohio
B.S. in M.E. 1958, University of Kentucky		B.S. in E.E. 1962, Case Institute of Technology	

\*Degree awarded September 30, 1964.



Roland Keener Bennett B.S. in Eng. 1961, The George Washington University	Md.	LeRoy Raymond Rosen B.S. in E.E. 1957, Columbia University	Va.
Bal Raj Bhussary B.S. 1948, Banaras Hindu University, India	India	Harbhajan Singh A.B. 1953, Punjab University, India	India
Robert Paul Caldarene B.S. 1948, Banaras Hindu University of Technology	Va.	B.M.E. 1958, University of Glasgow, United Kingdom	
Thomas Wesley Chappelle M.E. 1941, University of Cincinnati	Va.	James Walter Stinson B.S. 1956, U.S. Naval Academy	Md.
William Ignatius Fallon, Jr. B.E.E. 1958, Villanova University	Md.	Edwin Frank Stobie B.S. 1947, Massachusetts Institute of Technology	Pa.
Frederick John Gauvreau B.E.E. 1962, The George Washington University	Md.	B.S. 1954, M.S. 1955, U.S. Naval Postgraduate School	
Raymond William Godman, Jr. B.S. in E.E. 1960, University of Maryland	Md.	Kenneth Frances Sullivan B.S. 1962, St. Louis University	Va.
Donald John Greenwood B.S. in I.E. 1961, Northeastern University	Va.	Jerome Richard Temchin B.S. 1962, Worcester Polytechnic Institute	D.C.
Catherine Dryden Hock B.S. 1937, Mary Washington College	D.C.	James Elijah Victor, Jr. B.S. 1943, U.S. Naval Academy	Ark.
Walter Robert Horner B.S. 1945, U.S. Naval Academy	N.H.	B.S. in E.E. 1948, Massachusetts Institute of Technology	
Hrand L. Kurkjian B.S. 1949, Purdue University	Md.	George Edward Walton B.S. 1955, U.S. Coast Guard Academy	N.J.
George Michael Lang B.S. in I.E. 1951, Pennsylvania State University	Md.	Donald Gene White B.S. in E.E. 1956, Wayne State University	Md.
L.L.B. 1960, University of Baltimore		Harry DeNeal White, Jr. B.S. in C.E. 1955, University of Maryland	Md.
Gerald Andrew Petersen B.S. 1958, University of Wisconsin	Md.	James F. Wilson, Jr. B.S. 1958, Michigan College of Mining and Technology	Va.
Robert Clemens Piwko B.S. 1958, Purdue University	Md.	Mitchell Wiltuck B.S. 1959, Carnegie Institute of Technology	Md.
Marvin Reu Reese, Jr. B.E.E. 1954, Clemson University	Va.		

## MASTER OF SCIENCE IN ENGINEERING

FEBRUARY 22, 1965

Thomas Winslow Coleman B.E.E. 1959, The George Washington University	Md.	*Patrick Theodore Komiske B.S. in E.E. 1958, South Dakota School of Mines and Technology	Md.
Elbert Lucien Cox B.S. 1954, Howard University	D.C.	Richard Carl Kalo B.S. in E.E. 1962, University of Toledo	Md.
*Merle E. Crock B.S. in Eng. 1959, The George Washington University	Md.	Burton Randolph Laub, Jr. B.S. 1956, U.S. Naval Academy	Pa.
*John Tucker Day, Jr. B.E.E. 1956, Georgia Institute of Technology	Md.	Walter B. McIntyre A.B. 1951, University of Chicago A.B. 1958, University of California	Md.
William Walter Dorsey B.M.E. 1958, The George Washington University	Va.	*James Floyd Peterson B.S. in C.E. 1956, University of Missouri	Minn.
Kenneth Willis Edinger B.E. 1958, Youngstown University	Md.	Hugo Paul Pomrehn B.S. in M.E. 1960, University of Southern California	Calif.
Woodward G. Eicke, Jr. B.S. 1951, The George Washington University	Md.	Kenneth Putkovich B.S. in E.E. 1960, University of Pittsburgh	Md.
*Fred S. Flatow Fethi Osman Gogen B.S. 1962, Robert College, Turkey	Md. Turkey	Lee McComas Ramsey B.S. 1949, U.S. Naval Academy	Md.
Francis Joseph Hughes B.S. 1960, University of Miami	Md.	Joseph Edward Russ A.B. 1961, College of St. Thomas B.S. 1961, University of Notre Dame	D.C.
Douglas Linwood Jones B.M.E. 1961, The George Washington University	Va.	Robert Joseph Sanford B.M.E. 1962, The George Washington University	Md.
James Wallace Joyce, Jr. B.M.E. 1961, The George Washington University	Md.	Anthony Donald Skufca B.S. 1962, Geneva College	Ohio
		Henrik H. Straub B.S. 1962, University of Maryland	Md.

\*Degree awarded September 30, 1964.

## JUNE 6, 1965

Alan S. Berson B.E.E. 1950, City College, New York	Md.	Peter Joseph Riordan B.S. in C.E. 1960, University of Massachusetts	Mass.
Thomas Wesley Butler B.E.S. 1961, Johns Hopkins University	Md.	Charles Howard Rulofson B.S. in E.E. 1960, University of California	Md.
Arnold James Church B.S. in E.E. 1960, U.S. Air Force Institute of Technology	Va.	Frank Menges Schwartz B.S. 1956, Dickinson College B.C.E. 1958, The George Washington University	Md.
Warren R. Crockett B.E.E. 1957, The George Washington University	Md.	Frank Joseph Shields B.E.E. 1958, City College, New York	Va.
George H. Cronin II B.S. 1959, Massachusetts Institute of Technology	Va.	Paul McNeel Thrasher B.S. 1941, University of the South B.S. in E.E. 1943, Lehigh University	Va.
Richard Parker Dunbar B.S. 1958, U.S. Naval Academy	Calif.	James A. Ward B.S. in E.E. 1962, University of Akron	Md.
Perry Yates Jackson, Jr. B.S. 1958, U.S. Naval Academy	N.J.	John Bert Williams B.S. in E.E. 1960, Valparaiso University	Md.
John Henry Kelly A.B. 1962, Johns Hopkins University	Md.	Pranas Zunde Dipl. Ing. 1947, University of Hannover, Germany	Va.
Harry M. Martin B.S. in E.E. 1960, University of Maryland	Md.		
Henry Higgins Page, Jr. B.S. 1957, U.S. Naval Academy	Maine		

## MASTER OF SCIENCE

### FEBRUARY 22, 1965

Melvin Lee Goss B.S. in E.E. 1950, Purdue University	Va.
--	-----

## JUNE 6, 1965

Robert William Campbell B.S. 1963, University of California, Berkeley	Calif.	James Henry Hays B.E.E. 1963, Georgia Institute of Technology	Md.
David Hsien-Chen Fang B.S. in E.E. 1963, University of Maryland	Md.	Paul Loeleben B.E.E. 1963, Georgia Institute of Technology	Md.
Richard Thomas Francis B.S. 1949, Case Institute of Technology	Ohio	Kasivivanathan Vairavan B.E. 1962, University of Madras, India	India
Amritpal Singh Gill B.S.E. 1963, Howard University	D.C.		

## DOCTOR OF SCIENCE

### JUNE 6, 1965

Davinder Kumar Anand B.M.E. 1959, M.S. in Eng. 1961, The George Washington University Dissertation: "Thermal Ports in Linear Network Theory"	Md.
--	-----

## School of Education

### BACHELOR OF ARTS IN EDUCATION

FEBRUARY 22, 1965

*Patricia Ann Alley	D.C.	Patricia Lee Higgins	Mass.
*Nguyen Tu Anh	Vietnam	*Geraldine Arnold Hodgson	Va.
*Norma Bachman Barton	Va.	*Celia Ackerson Johnston	Va.
*William Francis Brzezinski	Pu.	Jo Anne Kessler	Fla.
*Winifred Norene Campbell	Va.	*Carole Lynne Kirk	N.Y.
*Wilda Goodrick Chewing	Va.	Toby Gilda Kirschner	Va.
Don Wisler Coble	Fa.	Mary Angela Komoroske	Va.
Jeanne Barnard Coffman	Va.	*Diane Marie Montag	Pa.
*Joanne Lee Darnell	Va.	*Gay Nell Ennis Neighbors	Va.
Judith David	N.J.	*Hazel Lemley Pierce	Md.
Frances Marie DeLeo	Md.	*Suzanne Quinby	Pa.
Jean Bunch DePriest	Va.	Jeffrey Lee Ring	Va.
*Catherine Griffith Edgerton	Md.	*Nancy Adelson Saturn	Va.
*Glenna Agnes Fleck	Va.	Carol Jane Schaufeld	N.Y.
Lynn Ann Galbraith	Va.	Paula Smith Silverman	Md.
*Maidee Renshaw Gilbert	Va.	*Gretchen Ilse Van Pool	Md.
*Richard Dirk Gnodde	Va.	*Carolyn Ann Walstrom	N.Y.
*Barbara Jean Helme	D.C.		

JUNE 6, 1965

Patricia May Arnold	Md.	Phyllis Davida Klasky	Mass.
Susan Lee Bahlke	N.J.	(With distinction)	
Ilene Baker	D.C.	Ken Croyden Kowalski	Va.
Barbara Joan Bedine	N.Y.	Leona Asper Leete	D.C.
Joan Mae Berelson	N.Y.	Roslyn Lichtman	Va.
Evelyn Lucy Blinar	Md.	Carolyn Eileen Mack	Va.
Carol Jane Buettner	Va.	Mary Helene MacLeish	N.Y.
Alice Jane Burch	Md.	Gail Haves Manchester	D.C.
Stephen Rex Cain	Md.	Barbara Leslie Mand	Md.
Roderick Allen Carr	D.C.	Cora Elizabeth Moore	Md.
Eleanor Dawson Cox	Va.	Marvin Mostow	D.C.
Suzanne Marie Czaplinski	Wis.	Janice Faye Niblett	Va.
Judith Ann Dillon	N.Y.	(With distinction)	
Karen Anne Dixon	D.C.	Rosemary Nigrelli	D.C.
Kathleen Marie Dove	Md.	Robert Joseph Passeri	Pa.
(With distinction)		Elise Goodrich Rytina	Md.
Ruth Stevenson Dragan	Va.	Judith Ellen Safranko	N.Y.
Sarah Maria Duffes	Conn.	Ann McFarland Sanders	N.M.
Peter George Duffy, Jr.	D.C.	Paulette Sharna Schofer	D.C.
Barbara Wharton Dyer	D.C.	Linda Myra Sennett	D.C.
Virginia Wharton Dyer	D.C.	Renee Senville	N.J.
(With distinction)		Mary Slaughter Skinner	D.C.
Judith Mickelson Epstein	Md.	(With distinction)	
William Russell Evinger	Va.	Susan Howe Sprague	Wash.
Mary Lynne Friedlander	N.J.	Nancy Marilyn Steinberg	N.J.
Rita Kay Gealow	Va.	Mary Conway Thom	D.C.
Doris Gittes	Va.	Susan Jane Urken	N.J.
Anna Margaret Glahn	Va.	Nan Jane Webster	N.Y.
Suzanne R. Glaser	Ohio	Ernest Everett Welch	Md.
Susan Carol Goldstein	N.J.	Susan Lewis Willcox	Va.
Lois Jean Gordon	Va.	Sandra Alice Wishner	D.C.
Margaret Ann Gray	Fla.	Norma Terese Yalon	D.C.
Susan Melanie Hamilton	Calif.	Joyce Tamara Yavner	Va.
Rosalind Jane Katz	N.Y.	Marilyn Trauben Yentis	Va.
Linda Marion Keighley	R.I.	Dale Sydney Young	D.C.
Susan Schulman Kirschenbaum	Md.		

### BACHELOR OF SCIENCE IN HOME ECONOMICS

FEBRUARY 22, 1965

Joan Barton Moriarty	Va.	Mary Catherine Young	Md.
----------------------	-----	----------------------	-----

\*Degree awarded September 30, 1964.



JUNE 6, 1965

Linda Ann Cheyney	Pa.	Mary Ann Sieverts	
Anne Mitchell Gokey	Va.	Mary P. Slaughter	Md.
Kathryn Kay Moody	Va.		Va.

# BACHELOR OF SCIENCE IN PHYSICAL EDUCATION

FEBRUARY 22, 1965

Gene Wright Beverly	Va.	Donald Charles Perriello	Va.
Donald Edwin Dworkin	Md.	*George Gilbert Stone, Jr.	Va.
*Thomas Michael Hawkins, Jr.	Va.	*John Philip Zier	Md.
Horace Minor Henson, Jr.	Va.		

JUNE 6, 1965

Susan Harriet Bernhard	N.Y.	Harry Hanson Haught, Jr.	Pa.
Irvin Walter Dieterle, Jr.	Va.	Eric Alexander Lewis	D.C.
Paul Flowers	Pa.		

# MASTER OF ARTS IN EDUCATION

FEBRUARY 22, 1965

Mary Bernice Battaglia	Va.	*Luella Eldridge	D.C.
A.B. 1938, D'Youville College		A.B. 1960, The George Washington	
*Cornelia Ann Jones Bell	Md.	University	
A.B. 1943, Wellesley College		Muriel Scull Elgin	Md.
Herbert David Black, Jr.	S.C.	A.B. in Ed. 1933, The George	
A.B. 1943, Erskine College		Washington University	
*Elsaine Bradshaw	D.C.	Shirley Lotz Elms	Va.
B.B.A. 1942, University of Georgia		A.B. 1963, Wellesley College	
*Edwin Charles Brennan	Wyo.	*Ruth Sparks Ferriss	Va.
A.B. 1953, Idaho State University		A.B. 1938, Louisiana State	
*Courtney Doyle Bright, Jr.	Va.	University	
A.B. 1958, Gettysburg College		*LaVerne Estella Fleming	D.C.
*William Frank Carpenter	D.C.	B.S. 1962, D.C. Teachers College	
B.S. 1940, Virginia State College		*Stanley Lee Fries	D.C.
*Morris Herbert Caspar	Md.	B.S. 1959, D.C. Teachers College	
A.B. 1958, The George Washington		*Barbara Allyn Fry	Va.
University		B.S. in Ed. 1957, Madison College	
*Selma Bessie Castagna	Va.	Jack Clair Gentry	Kans.
A.B. 1948, Union College		A.B. 1954, Washburn University of	
Anthony Louis Cermelo	Va.	Topeka	
A.B. 1950, Antioch College		*Beverley Louise Glemaer	Md.
*Charles Ray Clements	Va.	A.B. 1958, Oberlin College	
B.S. 1958, D.C. Teachers College		*Frederick Martin Goethe	Md.
*Irma Marie Cole	Md.	A.B. 1959, University of	
B.S. 1959, University of Maryland		Pennsylvania	
*Barbara Stokes Contee	D.C.	*Isaiah Artis Green	D.C.
B.S. 1957, D.C. Teachers College		B.S. 1956, D.C. Teachers College	
*Gerald Leo Conway	Md.	*Elaine Hendricks Gruver	Va.
B.S. 1952, Maryland State College,		A.B. 1956, Mary Washington	
Frostburg		College	
*William Frederick Costolo	Va.	*Guy William Guccione	N.Y.
B.S. in P.E. 1957, The George		B.S. in P.E. 1961, Pennsylvania	
Washington University		State University	
*Shirlee Hunt Craig	D.C.	Elizabeth Ellen Hargreaves	Pa.
B.S. 1959, D.C. Teachers College		A.B. 1963, Hood College	
*James Joseph Cuff	Md.	*Mary Belle Harris	Va.
B.S. in Sec.Ed. 1958, Pennsylvania		A.B. 1942, Asbury College	
State College, Bloomsburg		*Frank Larrimore Henry	Md.
Frank Lewis Danowski	N.Y.	B.S. 1951, Maryland State College,	
B.P.E. 1941, Purdue University		Salisbury	

\*Degree awarded September 30, 1964.

*Nancy Dickson Herbert A.B. 1956, Lenoir-Rhyne College	Va.	Thomas Richard O'Donnell A.B. 1958, LaSalle College	Pa.
Hazel Kuhns Hershberger A.B. in Ed. 1960, The George Washington University	D.C.	Carlyne Mae Olive A.B. in Ed. 1962, The George Washington University	Va.
Elizabeth Covington Hill A.B. 1958, Howard University	D.C.	*Mary Payne Owens B.S. 1962, D.C. Teachers College	D.C.
*Judith Nina Hyde A.B. 1962, Northwestern University	Mich.	*Gus Panagos B.S. in P.E. 1956, The George Washington University	Va.
*Harry Winfree Irvin, Jr. B.S. in P.E. 1958, The George Washington University	Md.	John George Pauliaick B.S. 1940, Pennsylvania State College, Indiana	Calif.
*Jacqueline Wray Jeffress A.B. in Ed. 1960, Madison College	Va.	*Nancy Jane Pease A.B. in Ed. 1959, The George Washington University	Md.
*Paul Eugene Jenkins B.S. in P.E. 1959, The George Washington University	Va.	*Francis Michael Piperno A.B. 1951, Catholic University of America	Va.
*Mary Broadhurst Johnson A.B. 1930, Meredith College	Md.	*Virginia Kathryn Pirrung A.B. 1933, Westminster College	Md.
*Frances Thurston Jones B.S. in Ed. 1948, St. Paul's College, Virginia	Va.	*Virgil Denver Puffenberger A.B. 1951, Shepard College	Md.
*James Louis Francis Jones B.S. 1956, Howard University	D.C.	*Charles Bass Reed B.S. in P.E. 1963, The George Washington University	Pa.
*Adrienne Gaines Jordan B.S. 1955, D.C. Teachers College	D.C.	Elsie Natalie Richter A.B. 1937, Wayne State University	D.C.
*Dorothy Johnson Kendrick A.B. 1942, Spelman College	Ohio	Charles Hamilton Rideout, Jr. A.B. 1959, Amherst College	Md.
*Brenda Robin Kiessling A.B. 1962, Oberlin College	Va.	Annie Lou Robinson A.B. 1958, Woman's College of the University of North Carolina	Va.
Leon Francis Kosmacki A.B. 1939, Duquesne University	Pa.	*Evalyne Bertha Robinson B.S. 1944, Hampton Institute	Md.
Ann Kalafatas Larouche A.B. 1942, A.M. 1948, Staley College of the Spoken Word	Mass.	Joseph Thomas Rodgers A.B. 1950, King's College	Md.
*Stanley P. Laski B.S. 1941, University of New Hampshire	Md.	*Joseph Andrew Roatkowski B.S. in P.E. 1953, University of Maryland	Md.
*Douglas Edward Lindsay A.B. 1950, The George Washington University	Md.	*Doris Sara Schuman A.B. in Ed. 1959, The George Washington University	Md.
John F. Lobuts, Jr. B.S. 1957, Fairmont State College	Md.	Suzanne Peck Smith A.B. 1959, Occidental College	Calif.
*Richard Harold Loritsch B.S. in Ed. 1955, Ohio State University	Va.	Allen Abraham Springer B.S. 1956, D.C. Teachers College	Md.
*Louise Hart Lucas B.S. in P.E. 1952, Boston University	D.C.	Virginia Clyde Starkey B.S. 1945, Radford College	Va.
*Ouida Vera Maedel B.S. 1946, Howard University	D.C.	*Pauline Turpin Stewart B.S. 1952, Maryland State College, Princess Anne	Del.
*Marjorie Cross McClurg A.B. 1950, Mary Washington College	Va.	*Beth James Stone A.B. 1948, Texas Christian University	Va.
*Gerald Francis McGee A.B. 1957, University of Maryland	Md.	Carol Meads Thomas A.B. in Ed. 1938, The George Washington University	D.C.
*JoAnne Marie McGinnity B.S. 1959, Wisconsin State College and Institute of Technology	Wis.	Romaine Bell Thomas B.S. 1951, D.C. Teachers College	D.C.
Josie Winifred Meeks B.S. 1959, D.C. Teachers College	D.C.	*Kebbede Tiku A.B. 1961, University College of Addis Ababa, Ethiopia	Ethiopia
*Geraldine Baron Meltz B.S. 1941, D.C. Teachers College	Md.	*Ruth Harris Twine A.B. 1953, Howard University	D.C.
Thomas Mifflin B.S. 1930, U.S. Military Academy	Va.	*Stanley Edmund Wagenhals B.S. 1940, U.S. Naval Academy	Va.
*Jimmie Lee Miller B.S. in Ed. 1954, University of Virginia	Va.	Polly Edward Waid B.S. in Ed. 1945, Radford College	Va.
Phyllia Emily Morton A.B. in Ed. 1963, The George Washington University	Tenn.	Helen Gwinn Wallace A.B. 1960, Sweet Briar College	Va.
Francis Wilson Moseley A.B. in Ed. 1963, The George Washington University	Va.	Ruth Schwartz Wanger A.B. 1960, Smith College	D.C.
Lucy Beverly Norville A.B. 1946, Meredith College	Va.	*Joyce Hardy Williams B.S. 1960, Virginia State College	D.C.
		*Miriam Jeanette Womble A.B. 1951, Virginia Union University	D.C.

\*Degree awarded September 30, 1964.

\*Basil Alexander Wood, Jr.  
A.B. 1948, University of North  
Carolina  
LL.B. 1952, The George Washington  
University

D.C.

\*Wilma Welch Wood  
B.S. 1950, D.C. Teachers College  
\*Grace Louise Woodfield  
B.S. 1951, University of Maryland

D.C.

Md.

# JUNE 6, 1965

Eloise Lockhart Adams	Va.	Florence Boyer Henry	Va.
B.S. in Ed. 1941, Madison College		B.S. in Ed. 1962, City College,	
Robert Joseph Adams	Tenn.	New York	
D.D.S. 1955, B.S. 1958, University		Walter Henry, Jr.	D.C.
of Tennessee		B.S. 1958, D.C. Teachers College	
Rita Cohen Apter	Va.	Arthur Karl Herold	Va.
A.B. 1950, Hunter College		A.B. in Ed. 1950, East Central	
Alex Baker	Ala.	State College	
A.B. in Ed. 1940, University		Lowell Basil Hinchliffe	D.C.
of Alabama		B.S. 1958, University of Maryland	
Winifred Mulloy Berquist	D.C.	Mary Stuart Hinson	Va.
A.B. 1933, University of North		A.B. 1943, Longwood College	
Dakota		Margaret Codispoti Humadi	Va.
Susie Nickens Brown	D.C.	A.B. in Ed. 1963, The George	
B.S. 1939, D.C. Teachers College		Washington University	
Richard Daniel Bulhack	Md.	George Washington Hutcheson, Jr.	N.Y.
B.S. 1960, D.C. Teachers College		A.B. in Ed. 1951, University of	
Frank Eugene Burtnett	Va.	Florida	
B.S. in Ed. 1962, Pennsylvania		James Stauffer Huy	Pa.
State College, Shippensburg		A.B. 1962, Juniata College	
Paul Kelly Carr	Md.	Andrew Ernest Jenkins III	D.C.
B.S. in Ed. 1956, Mount St. Mary's		B.S. 1961, D.C. Teachers College	
College		Anna Beth Jones	D.C.
John Richard Lance Cassidy	Va.	A.B. 1962, American University	
B.S. in P.E. 1939, University		Helen Delois Kates	D.C.
of Alabama		B.S. in Elem.Ed. 1959, Elizabeth	
Ruth Ella Collier	Md.	City State College	
B.S. 1955, Maryland State College,		Hannah Kolodny	D.C.
Frostburg		A.B. 1962, American University	
Alfred Patrick Collins	W.Va.	Peter Kovach	Md.
A.B. 1955, Concord College		B.S. in Ed. 1955, Pennsylvania	
S.T.B. 1960, Wesley Theological		State College, Millersville	
Seminary		Mary Ellen Larson	Va.
Geraldine Valgren Douglas	Va.	A.B. 1960, University of Michigan	
B.S. 1961, University of North		Ruth Myra Lebovitz	Pa.
Dakota		A.B. 1962, University of Pittsburgh	
Phyllis Virginia Fahrney	D.C.	Deborah Dorfman Levin	D.C.
A.B. in Ed. 1963, The George		A.B. 1940, University of Chicago	
Washington University		Thursa Owen Lewis	Va.
Kathryn Dolores Fisher	Va.	B.S. 1943, Western Kentucky State	
A.B. in Ed. 1959, The George		College	
Washington University		Lucy Jane Lowman	Va.
Marian Robinson Fletcher	D.C.	B.S. 1944, Radford College	
B.S. 1947, Bethune-Cookman College		Margery Davis Maize	Va.
Ralph Wilbur Foster, Jr.	Hawaii	A.B. 1939, American University	
B.S. 1946, U.S. Merchant Marine		Mary Templeman Marshall	Va.
Academy		A.B. 1957, American University	
A.B. 1963, U.S. Naval Postgraduate		Bernard John Matta	Va.
School		B.S. in P.E. 1963, The George	
Dorothy Kitzelman Frank	Va.	Washington University	
B.S. 1944, Kansas State University of		Donald Robert McDonough	Va.
Agriculture and Applied Science		A.B. in Ed. 1964, The George	
Antone Renkl Gallaher	Va.	Washington University	
B.S. 1933, U.S. Naval Academy		Charles Henry Miller, Jr.	Md.
Raymond Graham Hartman	Pa.	A.B. 1958, Washington and Lee	
B.S. in Sec.Ed. 1942, Pennsylvania		University	
State College, West Chester		Joseph Anthony Monte	Md.
Mary Elizabeth Hauke	Va.	B.S. 1960, St. Joseph's College,	
B.S. 1956, Richmond Professional		Pennsylvania	
Institute		Robert Jacob Moser	Md.
Avis Trotter Hawkins	D.C.	A.B. 1961, Goshen College	
B.S. 1950, D.C. Teachers		Mary Eleanor Nunn	Va.
College		A.B. 1957, University of Maryland	
Marguerite Michel Heitmann	Va.	Vilma Judith Parks	Panama
A.B. 1935, Miami University		A.B. 1957, Marycrest College	
A.B. in L.S. 1936, Emory		George Lawson Pasquella	Md.
University		B.S. 1958, University of Maryland	

\*Degree awarded September 30, 1964.



Nancy Corse Reed	Md.	Edward Nelson Vest	Md.
B.S. 1955, Rollins College		A.B. in Ed. 1959, The George Washington University	
Mabelann Goddard Reges	Md.	Isabelle Jean Walker	Md.
B.S. in Ed. 1933, D.C. Teachers College		B.S. 1959, Brigham Young University	
Margaret Cannon Schwartz	Md.	John Ford Wallis	Md.
B.S. in P.E. 1960, The George Washington University		B.S. 1958, Lycoming College	
Minnie Belle Sellers	Va.	Maurice Conrad Watson	D.C.
A.B. 1944, Elon College		B.S. 1956, D.C. Teachers College	
Patricia Lephew Shumate	Md.	Arch Woodley Webster	Md.
A.B. 1951, The George Washington University		B.S. 1960, Maryland State College, Frostburg	
Clyde Gray Simmons, Jr.	Va.	Mary Ann Weld	Minn.
B.S. 1956, College of William and Mary		A.B. 1961, Marymount College, New York	
Charles Henry Spriggs	D.C.	Carol Clark Wheatley	Va.
B.S. 1958, D.C. Teachers College		B.E. 1948, University of Vermont	
Charles Eugene Suhr	D.C.	John Edward Wood	D.C.
A.B. 1957, Oberlin College		B.S. 1962, Tennessee Agricultural and Industrial State University	
James Victor Tiernan, Jr.	Va.	Beth Walker Yancey	D.C.
A.B. 1960, Catholic University of America		A.B. 1964, Virginia Union University	

## MASTER OF ARTS IN TEACHING

JUNE 6, 1965

Jeanne Feder Bass	D.C.	Alice Sarah Linde	Va.
A.B. 1939, University of Michigan		A.B. 1964, The George Washington University	
Barbara Lee Brown	Va.	Carolyn Ann Pickell	Md.
A.B. 1963, Dunbarton College of the Holy Cross		A.B. 1964, The George Washington University	
Laura Elizabeth Carver	D.C.	Elizabeth Ann Ryan	D.C.
A.B. 1963, Duke University		A.B. 1964, College of New Rochelle	
Lynn Wood Dizard	D.C.	Phyllis Marie Samore	Md.
A.B. 1963, Mount Holyoke College		B.S. 1951, New York University	
Emily Alice Dvorin	D.C.	Harold Louis Sanders	D.C.
A.B. 1964, Rutgers, The State University		A.B. 1964, Columbia Union College	
Jane Louise Fayle	Nev.	Katherine Babcock Snow	N.J.
A.B. 1963, Radcliffe College		A.B. 1964, Sweet Briar College	
Ninetta Feldman	Va.	Judith Ann Stone	N.Y.
B.S. 1963, Howard University		A.B. 1964, Wellesley College	
Carolyn Gold	D.C.	Linda Jean Watson	Va.
A.B. 1962, Radcliffe College		A.B. 1964, The George Washington University	
Sandra Dale Hobbs	D.C.	Clarissa Lois Weidner	Va.
A.B. 1962, The George Washington University		B.S. 1944, Bradley University	
		Anna Maria Lloyd Warren Williams	Md.
		A.B. 1952, Bryn Mawr College	

## ADVANCED PROFESSIONAL CERTIFICATE

FEBRUARY 22, 1965

*Edith Mae Carroll	Texas	*Helena Kechne Lietwiler	Md.
A.B. 1948, A.M. 1958, Texas College of Arts and Industries		A.B. 1928, Western College for Women	
*Edith K. Chasnov	Va.	A.M. in Ed. 1956, The George Washington University	
B.S. 1945, New York University		Henry Grady MacDaniel	Fla.
A.M. in Ed. 1960, The George Washington University		B.S. in P.E. 1934, University of Alabama	
Ruth Ann Howell	D.C.	A.M. in Ed. 1962, The George Washington University	
B.S. 1956, D.C. Teachers College			
A.M. in Ed. 1961, The George Washington University			

\*Degree awarded September 30, 1964.

*Marcella Fenedick Mesarick B.S. 1941, Pennsylvania State College, Mansfield A.M. in Ed. 1961, The George Washington University	Md.	*Albert Duke Murden, Sr. A.B. 1951, University of Richmond A.M.T. 1952, Harvard University	Fla.
John Threston Morgan A.B., B.S. 1952, Shepard College A.M. in Ed. 1960, The George Washington University	W.Va.	*Evelyn Marie Nigh A.B. in Ed. 1954, A.M. in Ed. 1955, The George Washington University	Md.
		Salvatore Joseph Rinaldi Ed.B. 1951, University of Miami A.M. in Ed. 1961, The George Washington University	Md.

## JUNE 6, 1965

Florence Bernice Berger A.B. 1952, A.M. in Ed. 1958, The George Washington University	Md.	Richard Stephen Brown B.S. 1942, Maryland State College, Bowie	Md.
Frank Bernard B.S. in Ed. 1952, State University of New York	Va.	A.M. 1949, New York University	
A.M. 1956, New York University		Donald Allen Kiah A.B. 1951, Howard University	D.C.
Harold Lyle Brown B.S. 1948, Mt. Union College A.M. 1949, George Peabody College for Teachers	Fla.	A.M. in Ed. 1958, The George Washington University	
		John Evers Knipe A.B. in Sec.Ed. 1934, Shepherd College	W.Va.
		A.M. in Ed. 1942, The George Washington University	

## EDUCATION SPECIALIST

### FEBRUARY 22, 1965

Marguerite Herbert Russell A.B. 1933, Brenau College Ed.M. 1956, University of Virginia	Md.
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## DOCTOR OF EDUCATION

### FEBRUARY 22, 1965

Richard Charles Ahlberg A.B. 1947, Wesleyan University A.M. 1948, Columbia University Dissertation: "An Analysis of the Follow-up Procedures of the School Systems in the Metropolitan Washington Area with a Recommended Design for Following-up High School Graduates of a Large Suburban Public School System"	Md.	Margaret Ann Kiley B.S. in Ed. 1951, University of Buffalo A.M. in Ed. 1953, The George Washington University Dissertation: "Organization, Administration, and Current Practices of In-service Teacher Education Programs in Selected Secondary Schools, A Descriptive Study"	D.C.
Sidney Dorros A.B. 1946, University of Wisconsin A.M. 1950, Columbia University Dissertation: "The Identification of Learnings Needed by Experienced Public School Teachers to Fulfill Their Group Professional Responsibilities"	Md.	Charles Gilbert Nalley, Jr. B.S. in Ed. 1952, D.C. Teachers College A.M. in Ed. 1963, The George Washington University Dissertation: "A Descriptive Study of the United States Army, Navy, and Air Force Academy Preparatory Schools"	Md.
Ivan Welton Fitzwater B.S. in P.E. 1955, A.M. in Ed. 1959, The George Washington University Dissertation: "Required Competencies of Secondary School Teachers: An Analysis of What Is Currently Expected of Teachers in the United States as Revealed by the State Courses of Study"	Md.	Donald Henry Reddick A.B. 1952, Ed.M. 1953, University of Maryland Dissertation: "An Instructional Media Information System"	Md.

\*Degree awarded September 30, 1964.

Richard Donald Robbins B.S. 1950, A.M. 1951, Mississippi Southern College Dissertation: "A Study of Organized and Professionally Staffed Student Counseling and Guidance Programs in Member Institutions of the Association of University Evening Colleges"	Md.	Clarke Freeman Trundle A.B. in Ed. 1959, A.M. in Ed. 1962, The George Washington University Dissertation: "Projection of a Five- year Plan for Teacher Education in Kenya, 1965-1969, Inclusive"	Md.
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## JUNE 6, 1965

Henry Leo De Keyser A.B. 1937, A.M. 1942, Montclair State College Dissertation: "The Role of the High School Principal in Maintaining High Morale Among His Teaching Staff"	Va.	Frank William Kovacs B.S. in P.E. 1956, A.M. in Ed. 1961, The George Washington University Dissertation: "The Effects of 'Knowledge of Results' and Objective Evaluation on a Ninth Grade Group of Students in Algebra I"	Md.
Vernon Elmer Greaver A.B. 1951, A.M. 1953, A.M. in Ed. 1962, The George Washington University Dissertation: "A Survey and Analysis of Illiteracy Programs in the District of Columbia"	Va.	Harry Pitt B.S. in P.E. 1952, A.M. in Ed. 1955, The George Washington University Dissertation: "The Identification, Recruitment, Selection, and Appointment of Secondary School Principals in Public School Systems of 200,000 or More Population"	Md.
Julius George Hlubb A.B. 1929, Gettysburg College Ed.M. 1949, Johns Hopkins University Dissertation: "An Analysis of Student Enrollment at the Baltimore City College, 1954-1965"	Md.	Lawrence Winkler B.S. 1952, A.M. 1954, Washington University Dissertation: "A Study of Minnesota Multiphasic Inventories of Bright Achievers, Bright Underachievers, and Students with Designated Learning Difficulties"	Va.

## School of Government, Business, and International Affairs

### BACHELOR OF ARTS IN GOVERNMENT

#### FEBRUARY 22, 1965

*James Dunnington Babb, Jr.	D.C.	*Frederick Paul Hink	Va.
*Linda Gae Beyer	D.C.	Frances Louise Lee	D.C.
Elizabeth Louise Corson	D.C.	Eduardo Roberto Rodríguez	Texas
*Albert Ferri, Jr.	N.J.	Sharon Jean Scanlin	N.Y.
*John Edward Fricker	D.C.	*Joseph Leonard Schwarz	N.Y.
Thomas Addison Halsted	Md.	*Paul Robert Small	Va.

#### JUNE 6, 1965

Allan Angel Algoso	Calif.	Barbara Joyce Bruni	Pa.
Caasey Ann Bachner	D.C.	Sherri Yalon Buckner	Iowa
Paul Cole Beach, Jr.	Va.	David Grove Bussey III	Va.
Billy Browning Benton, Jr.	Calif.	David James Carey	Colo.
Helen Anne Bergquist	N.J.	Mildred Lee Carr	N.C.
Roger Keith Bond	Va.	Josef Victor Chytry	Fla.
Nancy Pierce Broyhill (With distinction)	Va.	(Special honors in International Affairs) Henry Lee Cummins	Md.

\*Degree awarded September 30, 1964.



Mary Chichester Davidson	D.C.	Susan Carol Petrovich	Ill.
Michael D. Davis	D.C.	Stuart Gerald Plotkin	N.Y.
Frank John Dellermann	N.Y.	Jaime Pujals	Puerto Rico
Neale Cary Dobkin	Conn.	Carol Irma Rahnasto	Mass.
Jon Gustave Eichstaedt	Calif.	Mila McGarraugh Raphael	Va.
Ronald Jeffrey Goldwyn	D.C.	Floyd Alonzo Riggs	D.C.
Gene Roger Harris	Oreg.	(With distinction)	
Joel B. Hincks	Va.	Thomas Robert Robinson	Texas
Ernest Richard Holz	D.C.	William Norman Rogers	Md.
Hilda Constance Knusli	Ohio	Marc Anthony Santacrose	The Netherlands
Peter Leo Kramer	Calif.	Basil George Scarlis	D.C.
Anita Beverly Lazer	N.Y.	Ronald Gordon Scheraga	N.J.
Ralph Benton Leaf	Md.	Daniel Ronald Siefer	Mich.
Patricia Leeds	Mo.	Richard Loxley Smith	Md.
James Conrad Leupold	N.J.	William Eugene Snow, Jr.	Bolivia
Helen Claudia Mann	Ill.	Kenneth Martin Steele	D.C.
Vern Jean McCullen	Md.	Ronald Allen Swart	Calif.
Miguel Angel Méndez	Texas	John Pressley Todd	Calif.
Howard Welby Nester	Conn.	George Fleetwood Ward, Jr.	Va.
Betty Ann O'Hara	Va.	Roxanne Fay Wenk	Ill.
Spencer Rowe Pearse	Va.	Garry von Wenske	Idaho
Michael Mark Perlman	N.Y.		

## BACHELOR OF BUSINESS ADMINISTRATION

FEBRUARY 22, 1965

Stuart Ian Anderson	N.Y.	Robert Joseph McCarthy	D.C.
*Francis Hugh Bell	Va.	Robert Francis McMahon	Va.
*Eleanor May Clark	Va.	Michael Starr Northrop	Md.
Frank E. Cook, Jr.	Va.	Richard Ernst Oden	Md.
*John Raymond Crutchfield, Jr.	Va.	Richard Derby Rettberg	Mass.
*Grace Shirk Du Pree	Md.	Arnold B. Ross	Va.
*Donald Henry Hill	Va.	*Arnold Phillip Shal	Pa.
*Roger Samuel Honig	Va.	*Virginia Leone Shoemaker	Va.
*Sherman Avery Kelsey	N.Y.	*Nicholas Smart	Va.
*Stephen George Kmeco	Va.	David Patrick Sparks	Ky.
*Jesse Ira Lasky	N.Y.	Carl Baker Straw	Va.
*Philip Banas Layfield	Md.	William Thomas Van Dorn	Va.
Stuart E. Leventhal	N.Y.	*William Robert Watkins	Md.
Robert Luzio	Bolivia	David Hart Wharton	Kans.
Lyman R. Marshall	N.J.	James R. Whitney	Va.

JUNE 6, 1965

Martin Auerbach	D.C.	Robert Thomas Laycock	N.Y.
Michael John Bates	N.Y.	Robert Henry Lees, Jr.	Md.
Tom J. Billman	Ohio	Theodore Olin Mather	N.J.
Kevin Storey Bouch	Va.	Kevin Edward McCormack	Va.
G. Anderton Burke, Jr.	Va.	Clayton Caywood McCuiston	Va.
Mark Stevens Clark	Ind.	Charles Toby Mederrick	Md.
Patricia Helen Cohen	N.Y.	Daniel Michael Kevin Morahan	D.C.
Wilkinson Grove Conrad IV	N.J.	Robert Murphy II	D.C.
Dean David Crambert	Va.	Donald E. Oberg	Md.
Henry Clinton Duquès	Ohio	Jan Eugene Olson	Va.
Thomas Hughes Fulcher, Jr.	D.C.	Ina M. Orwicz	D.C.
Elaine Ruth Geiger	N.Y.	Thomas E. Richards	D.C.
Alex Grassanovich	Conn.	Dennis Joseph Riley	D.C.
William Robert Greenwood	N.Y.	Michael J. Scrudato	Md.
Harry Lindley Grubbs III	D.C.	Andrew Seamons, Jr.	N.J.
Gideon Martin Haynes	Va.	Marilyn Lou Silverman	D.C.
Martin H. Hoffman	N.Y.	Roger Clarence Tripp	Va.
Charles Rapley Hooff III	Va.	Harry Franklin Ziegler, Jr.	Colo.
Byron Kline	Pa.	(With distinction)	Mich.
Dina Gail Kocsis	Va.		

\*Degree awarded September 30, 1964.

# MASTER OF ARTS IN GOVERNMENT

FEBRUARY 22, 1965

*Linda Elaine Anton A.B. 1962, Parsons College	N.Y.	*William Stanley Kroll A.B. 1958, Bowling Green State University	Ohio
Bill Richard Blalock A.B. 1960, The George Washington University	Ala.	Harry Vurner Lacy, Jr. B.S. 1949, Virginia Polytechnic Institute	Va.
*Munir Leon Bushara A.B. in Govt. 1962, The George Washington University	Va.	Brano M. Lajda Ph.D. 1942, Comenius University	Va.
*Wendell Burnham Cook, Jr. B.S. 1956, University of Massachusetts	D.C.	Lloyd Richardson Leavitt, Jr. B.S. 1950, U.S. Military Academy	Mich.
John Edward Cunningham A.B. in Govt. 1950, The George Washington University	D.C.	Harold Clifford Lyon, Jr. B.S. 1958, U.S. Military Academy	N.J.
*Norman Lee Dunfee B.S. in Phar. 1959, University of Cincinnati	Md.	Norman Dexter MacKenzie B.S. in Mil.Sc. 1958, University of Maryland	Fla.
*David R. Feeherry A.B. 1956, Harvard University	Mass.	Aubrey Franklin Mills A.B. 1961, University of California	Va.
Picot deBoisfeullet Floyd A.B. 1953, St. Mary's Seminary College	Va.	*John Arlin Mincher B.S. 1951, University of Oklahoma	Texas
Richard Middleton Herndon A.B. 1941, Washington and Lee University	Md.	Frederick Lungier Montgomery A.B. 1962, University of Arizona	Va.
Ilse Szczesny Higgins Gerald M. Hollander B.M.E. 1949, University of Southern California	D.C. Md.	*Roger Owen Moore A.B. in Govt. 1960, The George Washington University	Va.
William Ernest Howe A.B. in Govt. 1937, The George Washington University	D.C.	Eugene Ralph Nicolai A.B. 1934, University of Washington	Va.
Wesley Greer Johnston A.B. 1963, Ohio Wesleyan University	Md.	Jerald Jay Oppel A.B. 1963, Western Maryland College	Md.
Hedwig Klara Kochler A.B. 1963, The George Washington University	Germany	*William Thomas Penn A.B. 1957, Ohio Wesleyan University	Ind.
		Harry Warren Readnour A.B. 1961, Oklahoma State University of Agriculture and Applied Science	Va.
		*Richard Boardman Webb A.B. 1962, Occidental College	Calif.
		Robert Kirk Yearout A.B. 1962, Whitworth College	Wash.

JUNE 6, 1965

Barbara Diane Bates A.B. 1959, University of California, Los Angeles	D.C.	Jere Langdon Jackson A.B. 1963, Baylor University	Texas
Edward R. Brandt A.B. 1954, University of Minnesota	Md.	Robert E. Kendig A.B. 1939, College of William and Mary	Md.
Gary Kent Conwell A.B. 1963, Texas Western College	Texas	Jae Hong Kim A.B. 1959, Columbia Union College	Md.
Robert Bonner Crawford A.B. in Govt. 1963, The George Washington University	Va.	Reynold Judson Matthews A.B. in Govt. 1959, The George Washington University	Va.
John Lawrence Diesem A.B. 1964, The George Washington University	Va.	Shirley DoBos Patterson B.S. 1943, University of Chicago	Md.
Lorraine Loris Forbes A.B. 1962, University of Mississippi	Miss.	Kenton Harmon Pattie A.B. 1957, Ottawa University	Colo.
Nancy Cooper Gilbert A.B. 1962, Baylor University	Miss.	Julius Roy Saunders, Jr. B.C.P. 1960, University of Virginia	Va.
Benjamin Hill Hardy III A.B. 1959, University of Virginia	Va.	Richard Mark Seppa B.S. 1963, Oregon State University	Oreg.
Edward Warren Hassell B.S. 1946, American University	Va.	David Elroy Shikles A.B. 1963, University of Redlands	Colo.
Robert Darrow Hillier A.B. 1959, Sacramento State College	Calif.	Janet Lamb Shikles A.B. 1964, University of Redlands	Calif.
		Margarita Tsinanopoulou A.B. 1961, Lindenwood College for Women	D.C.

\*Degree awarded September 30, 1964.

# MASTER OF BUSINESS ADMINISTRATION

FEBRUARY 22, 1965

Charles Walker Brooks, Jr. B.S. in Com. 1959, University of Virginia	Md.	*Elias Gomez Lavadia A.B. 1951, Far Eastern University, Philippines	Philippines
*John Robert Burman B.S. 1941, University of San Francisco	Calif.	*John Frank Ligella B.S. 1953, Virginia Military Institute	N.J.
*Prasert Chaibongsai B.S. 1950, Royal Naval Academy of Thailand, Thailand	Thailand	*Elon Long B.S. 1951, University of Southern California	Calif.
Thierry Henri de Bremond B.S. in B.A. 1959, Georgetown University	D.C.	*Stanley Ray Luther B.S. 1961, Bethany College	Idaho
Earl Donald Dietrich A.B. in Govt. 1957, The George Washington University	Md.	Henry John Papavasiliou B.S. 1961, University of Maryland	Md.
*Nathaniel Ambrose Gallagher B.S. 1950, U.S. Military Academy	N.H.	*Edward Joseph Pilecki A.B. 1950, University of Connecticut	Conn.
Walter Lee Griswold, Jr. B.S. 1960, Arizona State University	Ga.	*Donald Edward Reeves A.B. 1951, University of Akron	Ohio
Leo Albert Hatten B.B.A. 1955, University of Texas	Texas	*William Joseph Ricard A.B. 1959, University of Denver	Colo.
*Martin J. Hegland B.S. 1949, University of Minnesota	Minn.	*John Siebe Roosma, Jr. A.B. 1959, Upstate College	N.J.
*Carl Richard Hein B.S. 1949, Southwest Texas State Teachers College	Texas	*Kenneth Leonard Saunders B.S. 1950, University of Oklahoma	Texas
*James Leonard Herlthy B.Gen.Ed. 1961, Municipal University of Omaha	Fla.	Philip Okun Shapiro A.B. 1956, Columbia University	Md.
*Kenneth Maxwell Holt B.S. 1955, East Carolina College	Va.	*John Michael Signorelli B.S. 1953, West Virginia University	Fla.
*Leslie Allan Hubbard B.B.A. 1963, The George Washington University	Va.	Willard Golding Teed B.S. 1932, Syracuse University	Fla.
*Kendall Olynn Iverson B.S. 1954, U.S. Military Academy	S.D.	Helmut Earl Thies A.B. 1963, The George Washington University	D.C.
*Ann Reed Johnson A.B. 1956, Syracuse University	Mo.	*Richard Grant Twining A.B. 1950, University of North Carolina	Hawaii
*George Howard Johnson B.C.E. 1949, University of Minnesota	Minn.	*Charles Edward Walton B.S. 1958, University of Maryland	Texas
Paul George Knouse B.B.A. 1960, University of Pittsburgh	Pa.	Sewell Marshall Webber A.B. 1952, Harvard University	Fla.
		Bruce Carroll Whitener A.B. 1961, The George Washington University	Md.
		*Earl Marshall Wysong, Jr. A.B. 1961, East Washington State College	Md.

JUNE 6, 1965

Moustafa Hassan Abdelsamad B.Com. 1961, Cairo University, Egypt	Egypt	George Wardman Bell B.S. 1950, U.S. Military Academy	N.Y.
Erwin Edward Abrams A.B. 1963, University of Minnesota	Minn.	Errol Lee Biggs A.B. 1962, Simpson College	Kans.
Douglas Arnold Allen B.B.A. 1950, University of Washington	Wash.	Ralph Kenneth Bowen B.S. in B.A. 1954, University of Denver	Colo.
Jack Collis Bailey A.B. 1963, Texas Christian University	Texas	Rhodes Boykin, Jr. B.S. 1949, U.S. Naval Academy	Fla.
James Ralph Bair B.S. 1957, Bob Jones University	Colo.	Douglas Wayne Briggs B.S. in Law 1957, University of Minnesota	Texas
Raymond Leon Balcer B.S. 1952, Oklahoma State University of Agriculture and Applied Science	Okla.	Phil Elliott Brookshire B.S. in Com. 1954, The Citadel	Calif.
Don DeWayne Beal B.S. 1953, Sam Houston State Teachers College	Texas	Robert Dean Brotherton B.S. 1959, University of Illinois	Pa.
Guy Leighton Beal, Jr. B.B.A. 1959, M.B.A. 1961, Northeastern University	Mass.	Arnold Gerhard Buetter B.B.A. 1939, City College, New York	Va.
Thomas Alfred Beckett A.B. 1958, Western Maryland College	Md.	William Miles Cavitt A.B. 1951, Michigan State University of Agriculture and Applied Science	Fla.

\*Degree awarded September 30, 1964.



Raleigh Cline	Md.	Lloyd Peter Lind	Md.
B.S. 1952, Livingston State College		B.S. 1963, Columbia Union College	
Roger Alan Crabbs	Iowa	Charles Woodford Long	Ky.
A.B. 1954, University of Iowa		A.B. 1951, Centre College of Kentucky	
Merrill Wayne Crews	Fla.	Kermit Keith Long	Va.
B.S. 1963, Virginia Polytechnic Institute		B.S. 1954, Madison College	
Richard Coppernoll Cuba	Md.	W. B. Lovell	Okla.
B.S. in E.E. 1962, Drexel Institute of Technology		A.B. 1952, University of Tulsa	
Hamlet Irvine Davis III	Texas	Wilbert Howard Luck	Calif.
B.S. 1963, Trinity University		B.S. in B. and P.A. 1957, Georgetown University	
Ralph Oliver Davis	Ark.	Leland Edward Maines, Jr.	N.J.
B.S. 1948, Hendrix College		B.S. in B.A. 1950, Lehigh University	
John James De Pierro	N.Y.	Fred Arthur Manske, Jr.	Va.
B.S. 1962, St. Peter's College, New Jersey		A.B. 1961, Ohio Wesleyan University	
John Hugh Dunlevy	N.D.	James Robert May	Ohio
B.S. in Com. 1951, University of Notre Dame		A.B. 1963, Western Reserve University	
John Mortimer Eathorne	Texas	Sister Mary John McCormack	N.J.
B.B.A. 1961, University of Texas		B.S. 1950, St. Mary's College, Indiana	
Ibrahim Mohammed El-Hady	Egypt	M.S. 1959, St. John's University, New York	
M.B., B.Ch. 1956, Cairo University, Egypt		Kenneth Leigh McMahill	D.C.
Earl Monroe Erickson	Texas	B.B.A. 1962, The George Washington University	
B.B.A. 1950, University of Texas		Houston Moore McMurray	Va.
William Richard Etnyre	Ill.	B.S. 1948, U.S. Military Academy	
B.S. 1959, University of San Francisco		Derril D. Meyer	Wash.
Graydon Edmund Fanning	Pa.	A.B. in Ed. 1954, Central Washington State College	
A.B. 1963, The George Washington University		Clayton Wiles Mills	Va.
William Michael Foley	Ill.	B.M.E. 1958, University of Florida	
B.S. in B.A. 1955, Marquette University		Sister M. Crescentia Mulvehill	D.C.
James Edward Gabriel	Md.	A.B. 1949, Mount Mercy College	
A.B. 1961, American University		M.E. 1955, Duquesne University	
Daniel Randall Gay	Ga.	Hugh LeRoy Murphy, Jr.	N.Y.
B.B.A. 1963, Georgia State College		B.S. 1954, Georgetown University	
Harry Saul Glass	N.Y.	Paul Francis Murray	Md.
B.B.A. 1960, University of Massachusetts		B.B.A. 1962, University of Oklahoma	
Lawrence Randolph Glenn	N.Y.	Louis B. Myers	Calif.
B.S. 1960, University of Pennsylvania		B.S.C. 1954, University of Iowa	
Frederick Joseph Graves	Ill.	Charles Gaylord Neelley	N.C.
B.S. 1961, Southern Illinois University		A.B. 1952, Guilford College	
Joseph James Guzzo	Md.	Thinh-Anh Nguyen-Khoa	Vietnam
B.S. 1961, Pennsylvania State University		A.B. 1963, Michigan State University of Agriculture and Applied Science	
Thomas William Harvey	N.Y.	William Joseph Michael O'Connor	Pa.
A.B. 1961, Georgetown University		B.S. 1954, University of Pennsylvania	
William Maurice Henry	Md.	Paul David Olson	Minn.
A.B. 1950, Western Maryland College		B.S. 1951, U.S. Naval Academy	
Thad Albert Hoyer	Pa.	B.C.E. 1956, Rensselaer Polytechnic Institute	
B.S. 1955, Pennsylvania State College, Clarion		Cecil Salvantes O'Neal	Texas
Lewis Maverick Jamison	Texas	B.S. 1958, Regis College	
B.S. 1949, U.S. Military Academy		Gary Lee Palmer	Wyo.
Richard Llewellyn Jones, Jr.	N.Y.	B.S. 1963, University of Wyoming	
A.B. 1962, Denison University		Samuel Wesley Pangburn	Md.
Alan Bruce Kahn	S.C.	B.B.A. 1961, University of Oklahoma	
A.B. 1962, Duke University		Juan Manuel Perez	Puerto Rico
Clifford Manford Kendall, Jr.	Mo.	B.B.A. 1963, University of Puerto Rico	
B.S. 1954, University of Maryland		Yves Edgar Pinet	Canada
Doyen Klein	Calif.	B.Com. 1957, St. Mary's University, Canada	
B.S. 1935, U.S. Naval Academy		James Robert Prichard	Kans.
Theodore Klish, Jr.	Pa.	A.B. 1960, University of Wichita	
B.S. 1957, U.S. Merchant Marine Academy		Mishka Michael Rabuka	Texas
David Eugene Kribs	Fla.	B.S. 1959, Madison College	
A.B. 1952, Southern Missionary College		Russell Rollan Rausch	Ohio
Stewart Lynburg Lane	Md.	B.S. in Bus. 1954, Miami University	
A.B. in Govt. 1961, The George Washington University		Samuel Raymond	Fla.
Daniel Lasso, Jr.	Panama	B.S. 1956, Florida State University	
Licenciado en Farmacia 1956, Universidad de Panama		Frank Reiner	Md.
Manuel Herbert Lazarov	Md.	B.S. in Phar. 1957, University of Pittsburgh	
A.B. 1957, Johns Hopkins University		Donald Joseph Rippert	Mich.
LL.B. 1962, University of Maryland		A.B. 1950, University of Michigan	
Charles Henry Leckrone	Ill.	Edward John Rosasco, Jr.	N.Y.
A.B. 1954, McKendree College		B.S. 1960, Syracuse University	
Leonard Stephen Leeds	Md.	Lawrence Michael Schwartz, Jr.	Kans.
A.B. 1959, University of Delaware		B.S. in Bus. 1959, University of Kansas	

Leo Joseph Scofield, Jr. B.S. 1955, College of the Holy Cross	Mass.	Flora Margarita Vales B.B.A. 1963, University of Puerto Rico	D.C.
Harvey Jefferson Simmons III B.S. in B.A. 1963, West Virginia University	W. Va.	Joseph Philip Vinti B.S. in Com. 1953, Rider College	Va.
Henry Peter Solomon B.S. 1962, Columbia University	N.Y.	Robert Harmon Wakefield B.S. 1958, Iowa State University of Science and Technology	Iowa
Verl Ray Stanley B.S. 1953, Utah State University of Agriculture and Applied Science	Utah	Land Daugherty Wall B.B.A. 1950, Texas Technological College	Texas
Theodore Henry Stearns B.S. 1958, University of Maryland	Va.	Edmund Meredith Waller A.B. 1952, University of North Carolina	Fla.
Ralph Bishop Strader III A.B. 1960, Bucknell University	Md.	John Xavier Ward B.S. 1951, American University	Md.
Sister M. Rachel Strittmatter Ed.B. 1959, Duquesne University	Pa.	John Leland Woodbury, Jr. B.S. 1951, U.S. Naval Academy	Va.
Michael Howard Sussman A.B. 1962, Bowdoin College	N.Y.	Robert Roman Worchesek B.S. 1957, Marquette University	Fla.
Leland Edward Turner, Jr. B.S. in Agr. 1951, Kansas State University	Kans.	Kenneth Nathaniel Worden B.B.A. 1954, Northeastern University	Md.
Walter Williams Umstead, Jr. A.B. 1951, University of North Carolina	N.C.	John Walter Young B.B.A. 1962, University of Pittsburgh	Pa.

## MASTER OF PUBLIC ADMINISTRATION

FEBRUARY 22, 1965

Marvin Roger Burt A.B. 1958, University of California	Va.
--	-----

JUNE 6, 1965

Mary Stephens Caldwell Henderson A.B. 1963, Radcliffe College	Mass.	Joseph Paul Popple B.S. in Com.Fin. 1956, Wilkes College	Va.
--	-------	---	-----

## DOCTOR OF BUSINESS ADMINISTRATION

FEBRUARY 22, 1965

*Ira Augustus Hunt, Jr. B.S. 1945, U.S. Military Academy M.S. in C.E. 1950, Massachusetts Institute of Technology Doctor of University 1954, University of Grenoble, France M.B.A. 1958, University of Detroit Dissertation: "National Security Contributions to Post World War II United States Economic Growth"	Mo.	Frank Harold Sargent B.S. 1958, University of Maryland A.M. 1960, The George Washington University Dissertation: "Economic Realism Versus Economic Theory: Revisionist Transformation in the Soviet Economic System"	Va.
Clair Richard Miller B.S. (Ind. Mgmt.) 1950, Ohio State University M.B.A. 1953, University of Michigan Dissertation: "Man-Machine Communications: An Assessment of the State of the Art in the Context of the United States Air Force"	Ohio		

JUNE 6, 1965

James Ira Mills A.B. 1927, Augustana College A.M. 1937, University of Illinois Dissertation: "A Study of Small Business and Federal Government Programs to Assist Small Business"	Md.	John Phillip Valentine A.B. 1957, San Francisco State College M.B.A. 1958, Syracuse University Dissertation: "An Analysis and Evaluation of the Federal Employee Health Benefit Program"	Va.
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\*Degree awarded September 30, 1964.

XX DEGREES CONFERRED

## DOCTOR OF PUBLIC ADMINISTRATION

JUNE 6, 1965

Aftab Ahmed	Pakistan
A.B. 1943, A.M. 1946, University of the Panjab, West Pakistan	
Dissertation: "The Indus Basin Project and the World Bank: A Case Study of Diplomacy and Administration in Economic Development"	

## College of General Studies

### ASSOCIATE IN ARTS

FEBRUARY 22, 1965

*Vernie Barrow, Jr.	Va.	*Eugene Frank Hastings	Va.
Thomas Francis Bub	Va.	*Selma Fay Heinke	Va.
Truman Burke	Md.	Arthur Martin Hillery, Jr.	Conn.
Richard Harry Campana	Va.	*Patricia Irene Jeter	D.C.
Betty Horowitz Casper	Md.	Norbert Urban Linder	Pa.
*Albert Joseph Charron, Jr.	Mich.	*Walter Lorenzo	Puerto Rico
Howard Edward Dow	Va.	Gregory Lawrence Maguire, Jr.	Calif.
*Aleksander Einseln	N.J.	*Sperry March Millikin	Va.
William Ewald	Mich.	Robert Allen Sutton	N.J.

JUNE 6, 1965

Marguerite Virginia Dallas	Va.	John Raymond Mueller	Va.
Richard Frederick Henchel	Va.	Leo William Phair	Va.
Harry Clay Hoffman III	Pa.	Charles Benson Raper	Va.
Hilliard Lockwood Hunter	Va.	John MacLaren Richardson, Jr.	N.J.
Elmer Scott Key	Va.	Charles Benjamin Salsgiver	Md.
Thaddeus Frederick Levandowski	Conn.	Edward L. Stubbs	Va.
Irving Lind	Va.	Jerrold Lynn West	Md.
Harvey Bernard Love	Md.	Harold Francis Williams	Pa.
Eugenia Ludwig Luckman	Va.		

### BACHELOR OF ARTS

FEBRUARY 22, 1965

*Alan Donald Bauerschmidt	Fla.	Max Leon Cooper	Tenn.
James McNett Blakeman	Calif.	*Parker Cleeve Cooper	Calif.
*Ben Ward Blee	Va.	*Jerold Hays Cort	Mich.
Ronald Raye Bolton	La.	Channing Howard Cox	Fla.
Wallace Clay Bosworth	Ill.	*Lewis Edwin Davis, Jr.	Pa.
*Donald Edward Brouillette, Sr.	Ill.	*James Addison Diddle	Ohio
Harry Joyce Burkert, Jr.	Va.	Bruce Johnson Dietz	Calif.
Philip Roderick Bush	R.I.	Frederick Charles Dodson	N.J.
*Joseph David Cicero	N.J.	*John David Duffus	Md.
David Cleeland	Va.	James Howard Dunn	Pa.
(With distinction)		*Albert Max Elton	Ga.

\*Degree awarded September 30, 1964.



Jack Andrew Endacott	Texas	*James Louis Miller	Ala.
*Franklin Andrew Engelhardt	Calif.	*John David Moore	Calif.
*Harold Davis Ettinger	Md.	*Joseph Robert Mulvey	Calif.
Fay Douglas Fulton	Ill.	*Idella Murray	D.C.
Emile Normand Giard	Md.	*Jack Arian Nelson	Pa.
*Neil Myron Gobrecht	Ohio	Roy Edward Nicely	W.Va.
*G. Preston Grant	Ariz.	*Michael Noel O'Sullivan	N.Y.
*Ralph Hillis Groover, Jr.	Fla.	*Zigmund Plecha	Va.
Paul Edwin Hack	Mo.	Harry Theodore Quinn, Jr.	N.Y.
Russell King Haight	Calif.	Richard Coughlin Reynolds	Ohio
*Jack Harris	Ill.	Langston Eugene Richardson, Jr.	La.
*Robert Edward Harris	Va.	*Rembrandt Cecil Robinson	Pa.
*Allan Swinton Harte, Jr.	Md.	Richard Caidle Rogers	Conn.
Harley Lavar Heaton	Wash.	*James Llewellyn Rothermel	Pa.
Corky James Worrall Hedges	Texas	Bernard Leighton Samuels	Calif.
James Harold Herrin	Calif.	Frank Schmidt	Oreg.
*Kenneth Fearlin Hines	Ohio	Robert Francis Schoultz	Nebr.
*Charles Francis Hoy, Jr.	Fla.	*Garnett Gene Sherman	Calif.
Clyde Eugene Hudson	Md.	*Robert Dale Springer	Pa.
*Stanley David Hyman	N.Y.	Roger Spencer Staff	Mich.
Lionel F. Johnson	Va.	*David George Swinford	Calif.
*James Jarlath Kelly	Calif.	*Roderick Ormsby Symmes	Calif.
Alice Berna Krone	D.C.	Frank Carlisle Thomas	Texas
Norbert Louis LeBlanc	D.C.	*Lawrence Doran Thompson	Ohio
Paul Woodrow Long	Minn.	John Thomas Thornberry	Ky.
*Billie E. Loos	Ill.	*Mike Julio Trens	Calif.
*Clarence Eugene Mackey	Calif.	*Robert Shortidge Walker, Jr.	Pa.
*Howard Dean Madison	Mont.	Charles Leslie Watson	Fla.
Richard McClure	Calif.	*Harold Andrew Weaver	Ill.
James Theron McDaniel	Calif.	Thomas Bernard Whalen	Va.
*Anna Frances McGrath	Pa.	Ovie Clifton White	Calif.
Benjamin Abbott Mead	Wash.	*Thomas Eugene Wiggins	Fla.
Edwin L. Meng, Jr.	Mo.	*Charles Burton Wild, Jr.	Iowa
Arthur Michael Meranski	Conn.	Theodore Dunsmore Wood	Pa.

## JUNE 6, 1965

James Houston Armstrong	Fla.	Rupert Walker Legare, Jr.	Va.
Laurence Paul Bowdren	Md.	Gaylord Booth Lyon	Mo.
Donald Joseph Brideau	N.J.	Benjamin Harris Macon, Jr.	Texas
Arthur Alexander Christiansen	N.Y.	Randolph Manning	Ga.
Harold Llewellyn Clark	Va.	Helen Wolfe Martin	Md.
(With distinction)		Joe Howard McGlothlin, Jr.	Va.
Walter Raymond Conley	Ill.	Richard Robert Miller	Calif.
(With distinction)		Lloyd Charles Morris	Texas
Claude Andrew Crow, Jr.	Va.	Robert Jackson Ney	Texas
Edna May D. Curran	D.C.	Earl Norris	Mich.
Samuel De Stefano	Va.	Emanuele Joseph Passanial	Calif.
(With distinction)		Elisabeth Loriane Perrin	Va.
Joseph Cornell Duff	Calif.	Marcel Nelson Piller	Ill.
Jones Newton Epps	Ga.	Frederic Maury Richardson	Mass.
Francis Xavier Faherty	R.I.	Theodore Henry Runyon	Ariz.
(With distinction)		Lewis Nottingham Samuelsen	R.I.
John R. Hansen	W.Va.	Coy Thomas Sevier	N.C.
Howard Hodges Harris	Ohio	William Henley Shawcross	N.Y.
Warren Arthur Higley	Wyo.	Alton Davis Slay	Fla.
Max Shofner Hildreth, Jr.	Fla.	Bradford Knight Speight	Va.
Henry Charles Houkal	Ill.	(With distinction)	
Rachel Gay Johnson	Ala.	Merriwell William Vineyard	Texas
Charles Franklin Jones	Ill.	Joseph Anthony Wolda	Mich.
Eugene Russell Keller	Md.	Robert Kenneth Zentmyer	Mich.
Donald Gordon Kent	Wash.	Lonnie Victor Zimmerman	Md.
David Anthony King	N.Y.		

## BACHELOR OF BUSINESS ADMINISTRATION

### FEBRUARY 22, 1965

William Johnson Auton	Calif.	*Charles DeWitt McManus	Mass.
Terrance Eugene Cowan	Ohio	Charles Richard Mountain	N.Y.
Jon Walter Klotz	Va.	William Craig Murray	Calif.

\*Degree awarded September 30, 1964.

JUNE 6, 1965

Vincent James Balkam	Mich.	Malcolm Kenyon Law	Pa.
James C. Chidester	Va.	Dexter Cleveland Rumsey II	Fla.
Wade Doran Hall	Va.	Esteban Unpingco Torres	Guam
Oscar Burson Johnston	Miss.	Lloyd L. Vandenberg	Va.
Nicholas Joseph Kakalec	Va.	Charles Montgomery Williams	Fla.
George William King	Va.	Claude Russell Yates III	Va.
(With distinction)			

# BACHELOR OF SCIENCE IN GEODETIC AND CARTOGRAPHIC SCIENCE

FEBRUARY 22, 1965

Maximilien Charles De Henseler	D.C.
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JUNE 6, 1965

Joseph Pollio (Special honors in Cartography)	Me.
--	-----

# MASTER OF ARTS

FEBRUARY 22, 1965

René John Ackerman B.S. in Acct. 1959, St. Peter's College, New Jersey	N.J.	Herbert William Carr A.B. 1947, University of Rochester	N.Y.
*William Tipton Alexander B.S. 1949, Austin College	Va.	James Ruel Christensen B.S. 1938, University of Utah	Utah
*Charles William Allport B.S. 1962, U.S. Air Force Academy	N.Y.	Helen Anna Chrobak A.B. 1949, Butler University	Ind.
Lewis Eugene Angelo A.B. 1964, The George Washington University	Pa.	Ethel Finkelstein Conlisk B.S. 1938, New York University	Va.
Edward Patrick Appert B.S. 1946, U.S. Naval Academy B.S. in M.E. 1952, M.S. in M.E. 1953, U.S. Naval Postgraduate School	N.J.	Edgar Glenn Conner, Jr. A.B. 1962, The George Washington University	Va.
Milton Symonette Baker B.S. 1950, The Citadel	Fla.	*Leland M. Cook B.S. in Mil.Sc. 1961, University of Maryland	Md.
Reginald Dunbar Barta A.B. 1958, The George Washington University	Va.	*Manley Hill Cosper, Jr. A.B. 1962, University of Kansas	Va.
*Alan Donald Bauerschmidt	Fla.	David Jerome Daly LL.B. 1959, Suffolk University	Maine
*William Beck, Jr. A.B. 1947, Harvard University	Calif.	*William Henry Dawson B.S. 1958, U.S. Naval Academy	Md.
Thomas Neros Berthiaume B.S. in M.E. 1960, University of Notre Dame	N.Y.	*William Ralph DeLoach B.S. 1939, U.S. Naval Academy	Va.
Howard Anthony Blancheri A.B. 1964, The George Washington University	Va.	*James Powell Early A.B. 1952, Atlantic Christian College	Va.
*Alvin Leonard Bosworth B.S. 1951, Louisiana State University	Va.	*Steven Hamilton Edwards B.S. 1958, U.S. Naval Academy	Maine
Frederick Ralston Bowie B.S. in B.A. 1951, University of Missouri	Ill.	Beverly Hawthorne Fleming A.B. 1951, Berea College	Va.
Donald Charles Bradley B.S. in B.A. 1952, State University of New York at Buffalo	N.Y.	*Benjamin August Fornonzini A.B. 1961, The George Washington University	Conn.
David Daniel Bunnell B.S. 1962, Clemson Agricultural College	Pa.	Joan Marie Frazier A.B. 1950, Rosary College	Md.
		*Daniel Herbert Freeman B.S. 1942, U.S. Naval Academy	Wyo.
		Willis Jewett Gary B.B.A. 1940, University of Washington	Wash.
		*Glynn Roy Greer A.B. 1961, Roanoke College	Va.

\*Degree awarded September 30, 1964.

Robert Earl Greeves B.S. 1960, Huron College	S.D.	George Powell Montgomery, Jr. B.S. 1943, U.S. Naval Academy	Miss.
Charles Edward Gresham, Jr. B.S. 1958, University of Baltimore	Md.	Lawrence Leo Newhouse A.B. 1962, The George Washington University	Va.
Thomas Lee Griffin, Jr. B.S. 1952, U.S. Naval Academy	Fla.	*Robert Joseph Normandeau A.B. 1960, St. Anselm's College	N.H.
Clifford Donald Hall A.B. 1960, The George Washington University	Fla.	*Oliver Lewis Norrell, Jr. A.B. 1949, Virginia Union University	Va.
*Lloyd Bradley Havird B.S. 1953, Bob Jones University	Ga.	William Ashley O'Quinn A.B. 1964, The George Washington University	Fla.
William Pierce Hobgood B.S. 1961, Florida State University	Fla.	*Berton Edward Owens B.S. 1951, Randolph-Macon College	Va.
*Clifford Eugene Hunter B.S. 1944, U.S. Naval Academy	Ill.	Victor Eugene Patrick A.B. 1951, Emory University	Ga.
*Gerald Henry Hyndman B.S. 1952, U.S. Naval Academy	Kans.	*Angelo Robert Peluso B.S. 1960, Rider College	N.J.
*Eldon Allen Jacobs B.S. 1947, Northwestern State College	Kans.	*Robert Carlton Perdue, Jr. A.B. 1961, Vanderbilt University	Ala.
B.S. in E.E. 1956, U.S. Naval Postgraduate School		*Edward Ernest Peterman B.B.A. 1959, Tulane University of Louisiana	Va.
Daniel Victor James B.S. 1954, College of St. Joseph on the Rio Grande	Ill.	John Franklin Phelps A.B. 1956, St. John's University	N.D.
*Jack Orlando Johnson A.B. 1939, Florida Southern College	Fla.	George Pilarinos A.B. 1953, Queens College	D.C.
LL.B. 1946, University of Florida		*Ogene Pitts A.B. 1963, The George Washington University	Okla.
John Byron Kambanis B.S. in B.A. 1961, Northwestern University	Ill.	*Marvin Leroy Ramsey A.B. 1952, Ottawa University	Mo.
*Mary Alice Kelly B.S. in B.A. 1962, University of Minnesota	Minn.	Robert Luman Ray B.S. 1956, St. Lawrence University	N.Y.
*Raymond Jerome Kostner B.B.A. 1953, University of Wisconsin	Wis.	Augustine Bartlett Reynolds, Jr. B.S. in Mil.Sc. 1960, University of Maryland	Conn.
*Edward Francis Lane B.S. 1950, Temple University	Md.	Robert Ernest Richardson A.B. 1937, University of Kansas	Kans.
Walter Matthew Langan B.S. 1955, New York University	Va.	Vernon Gale Rivers A.B. 1949, San Diego State College	Calif.
Cornelius Guy Lee B.S. in Mil.Sc. 1959, University of Maryland	Wis.	Richard Williams Ruehe B.S. 1950, University of Illinois	Ill.
Jack Mervin Lerond A.B. 1946, University of California	Calif.	*George Gustave Ryffel A.B. in B.A. 1941, Montana State University	Mont.
John Blair Little B.S. 1945, U.S. Naval Academy	Texas	*Julius Albert Sakas A.B. 1958, The George Washington University	N.J.
*Robert Passmore Liversidge, Jr. A.B. 1962, Cornell University	Pa.	Carl Thayer Sieg Ph.B. 1941, Dickinson College	Va.
*Richard Wilbur MacKay A.B. 1957, Pennsylvania State University	Pa.	*James Howard Sikes B.S. 1956, U.S. Naval Academy	Md.
Jacob Nathaniel Markowitz B.B.S. 1960, University of Pittsburgh	Va.	Jay Ray Smith, Jr. B.S. 1954, U.S. Naval Academy	Ohio
*Stewart Boone McCarty, Jr. A.B. 1954, University of California	Okla.	Kermit Wilfred Strebel A.B. 1942, Carleton College	Minn.
*Walter Stark McCracken B.S. in Mil.Sc. 1957, University of Maryland	Pa.	*Alphonse Donald Suslick A.B. 1941, University of Wisconsin	Va.
A.M. 1963, The George Washington University		Gerald Francis Szucs A.B. 1962, University of Detroit	Mich.
*Lawrence McGlade B.S. in Mil.Sc. 1960, University of Maryland	Calif.	Frederic C. Teich, Jr. B.S. 1938, U.S. Military Academy	Conn.
*Ronald Owen McGrath B.S. in Eng. 1961, Arizona State University	Ariz.	*Lawrence Peter Theisen B.S. 1962, Indiana University	Minn.
*Rodney Dean McKittrick B.S. 1956, University of Maryland	Ind.	*Richard Gordon Tillman A.B. 1948, University of Georgia	Va.
*Roger Emerson Melick B.N.S. 1945, Marquette University	N.J.	Harold Forrest Tipton, Jr. B.S. 1949, U.S. Naval Academy	Calif.
Norman Charles Miller B.S. 1962, Sacramento State College	N.J.	*Donald Richard Trueblood B.S. 1949, U.S. Naval Academy	Ind.
*Gilbert Emory Millington B.S. in Mil.Sc. 1958, University of Maryland	Calif.	B.C.E. 1951, Rensselaer Polytechnic Institute	
	N.J.	Lawrence Vernon Truitt B.S. 1962, University of Baltimore	Md.
		Philip Arnold Tucker B.S. 1961, University of Maryland	Md.

\*Degree awarded September 30, 1964.



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Craig Luther Barnum B.S. 1957, U.S. Naval Academy	N.Y.	William John Gleason B.S. in Mil.Sc. 1959, University of Maryland	N.Y.
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## MASTER OF ARTS IN INTERNATIONAL AFFAIRS

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*John Charles Bennett B.S. 1945, U.S. Military Academy A.M. 1951, Columbia University	N.J.	Donald Allen Christenson B.B.A. 1951, University of Minnesota	Minn.
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*Daniel Edward Bergin B.S. 1942, U.S. Naval Academy	Va.	*Lawrence Locke Clayton, Jr. B.S. 1944, U.S. Military Academy	Fla.
*Fred Jay Bernstein B.N.S. 1946, Tufts University	N.Y.	*Robert Gardner Cochrane B.G.E. 1962, Municipal University of Omaha	Nebr.
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*Robert Osgood Brooks A.B. 1942, Yale University	Conn.	*Asbury Coward III B.S. 1938, U.S. Naval Academy	Pa.
*Joe Ben Bruce B.G.E. 1962, Municipal University of Omaha	Texas	*Leon Crenshaw B.S. 1942, University of Missouri	Va.
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*Howard Math Fish	N.J.	*William Elias Gray	La.
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*Paul Albert Fitzgerald		B.S. 1941, Louisiana State University	
B.S. 1957, University of Maryland		*John Everett Greenbacker	Mo.
*John Henry Fitzgerald		B.S. 1940, U.S. Naval Academy	
A.B. 1948, Muhlenberg College		LL.B. 1949, Georgetown University	S.C.
*Thomas Arthur Fleck		*Joseph Michael Greene	Conn.
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*Erling Jerome Foss		M.S. 1950, Harvard University	Ill.
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B.S. 1950, U.S. Naval Academy		B.S. in I.E. 1957, Illinois Institute of Technology	
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*Dayton Seymour Mak B.S. 1939, University of Arizona	D.C.	*Arthur Stanley Moreau, Jr. B.S. 1953, U.S. Naval Academy	Md.
*Roy Wilson Malone B.S. 1951, U.S. Naval Academy	Ohio	*Thomas Elder Morgan, Jr. B.S.C. 1941, Ohio University	Pa.
*Nikitas Constatin Manitsas B.S. 1945, U.S. Military Academy	N.Y.	*James Wingfield Morris B.S. 1945, U.S. Military Academy	Ga.
M.S. 1950, University of Illinois		B.S. in Aero Eng. 1945, University of Michigan	
*Joseph Ward Marks B.S. 1963, University of Maryland	Fla.	*Robert Eastin Morris A.B. 1952, Princeton University	Mo.
John Louis Marocchi B.S. in E.E. 1941, U.S. Naval Academy	Tenn.	*Herbert Pratt Mosca, Jr. Ed.B. 1959, State University of New York at Buffalo	Pa.
Academy M.E.A. 1957, The George Washington University		*James Lloyd Moss B.S. 1946, U.S. Naval Academy	Fla.
*Edward Otis Martin B.G.E. 1956, Municipal University of Omaha	Calif.	A.M. 1953, Stanford University	
Theodore Christopher Mataxis A.B. 1944, University of Washington	Wash.	*John Francis Mulhern B.G.E. 1963, Municipal University of Omaha	Maine
*Howard Lynn Matthews, Jr. B.S. 1946, U.S. Naval Academy	S.C.	*Gordon Ernest Mulvey B.S. 1961, University of Maryland	N.H.
George Mayo, Jr. B.S. 1940, U.S. Military Academy	Va.	*John Edwin Murphy A.B. 1943, University of Dayton	Ill.
*Marvin George McCanna, Jr. B.S. 1953, U.S. Naval Academy	Pa.	*William John Murphy, Jr. B.G.E. 1961, Municipal University of Omaha	N.Y.
Albert Jordan McChristy, Jr. B.S. 1937, Howard Payne College	Texas	Thomas Denman Neier B.S. 1937, U.S. Military Academy	N.J.
Joseph James McClelland B.S. 1940, U.S. Coast Guard Academy	Wash.		
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\*Degree awarded September 30, 1964.



*Robert Wesley Netting B.S. 1943, U.S. Naval Academy	Calif.	*Donald Volney Rattan B.S. 1945, U.S. Military Academy	Texas
*Charles Carmin Noble B.S. 1940, U.S. Military Academy M.S. in C.E. 1948, Massachusetts Institute of Technology	N.Y.	*Charles Henry Reidenbaugh B.S. 1963, University of Maryland	Ohio
*Forrest Henson Norvell, Jr. B.S. 1939, University of Richmond	S.C.	*Arthur Sullivan Reinhart B.S. (Ch.E.) 1941, Texas Technological College	Texas
*John William O'Donnell B.S. 1952, U.S. Naval Academy B.S. in Aero.Eng. 1959, U.S. Naval Postgraduate School	Texas	*Frank Leslie Rents B.S. 1951, U.S. Naval Academy B.S. in M.E. 1957, U.S. Naval Post- graduate School	Del.
*Robert Hilton Offley, Jr. B.S. 1942, U.S. Military Academy M.S. 1949, University of Southern California	Texas	*Forrest Ithamar Rettgers A.B. 1959, University of Maryland	Pa.
*Phil Grant Olsen B.S. 1964, University of Utah	Texas	*Philo Henry Rhynehart B.S. 1960, American University	Ind.
*John Andrew Overn B.S. in Mil.Sc. 1962, University of Maryland	Ill.	*Ray Allan Risterink D.D.S. 1947, Marquette University	Mich.
*Robert Gordon Owens, Jr. B.S. 1938, Furman University	Va.	*George William Ringenberg B.S. 1942, U.S. Naval Academy	Wash.
*Samuel Henry Packer B.N.S. 1945, Tufts University	N.Y.	*Daniel William Riordan B.G.E. 1961, Municipal University of Omaha	D.C.
*Richard Michael Paikovic B.S. 1960, U.S. Naval Postgraduate School	Ohio	*Charles Clay Roberts, Jr. A.B. 1941, University of Oklahoma LL.B. 1948, The George Washington University	Calif.
Francis Fox Parry B.S. 1941, U.S. Naval Academy	Pa.	*George Henry Rood A.B. 1939, University of Florida LL.B. 1950, LL.M. 1956, The George Washington University	Fla.
*Lee M. Paschall A.B. 1957, University of Alabama	Colo.	*William L. Ross B.S. in Mil.Sc. 1963, Municipal University of Omaha	Mo.
*Paul Francis Patch A.B. 1961, University of Maryland	Colo.	*Alvin Ernest Rusche A.B. 1958, The George Washington University	S.D.
*Harry Randolph Patrick B.S. 1945, U.S. Military Academy	Texas	*Max Robinson Rush B.S. 1944, U.S. Naval Academy	Mo.
*Samuel Merrick Patten B.S. 1940, U.S. Military Academy	Okla.	*Karol Frank Rybos B.S. in Ed. 1963, University of Alabama	N.Y.
*Edward Horace Patterson B.G.E. 1963, Municipal University of Omaha	Texas	*Bertram Stillwell Ryder A.B. 1942, Colgate University Everett George Ryder B.S. 1961, U.S. Naval Postgraduate School	N.Y. Fla.
*Gerald Jackson Patton B.S. 1944, U.S. Naval Academy M.S. 1951, Lowell Technological Institute	R.I.	*Rex Russell Sage B.G.E. 1961, Municipal University of Omaha	Fla.
*Thomas Jones Patton A.B. 1941, Yale University	Va.	*Carl William Schaad B.S. 1939, Oregon State University	Wash.
*Max Lavern Pettijohn A.B. 1952, Doane College	Nebr.	*James Robert Schmoller B.S. 1947, U.S. Naval Academy	D.C.
*Jackson Reed Pickens B.S. 1947, U.S. Naval Academy A.M. 1958, U.S. Naval Postgraduate School	Ill.	Walter Albert Schriefer B.S. 1949, U.S. Naval Academy	Calif.
*Joseph Edward Pleklik B.S. 1950, University of Maryland M.B.A. 1953, Indiana University	Mass.	*Richard Hamilton Schuler B.S. 1940, University of Illinois A.M. 1949, Columbia University	Ill.
*Younger Arnold Pitts, Jr. B.S. 1943, U.S. Military Academy	Calif.	*Maylon Truxtun Scott B.S. 1943, U.S. Naval Academy	Va.
*Jack Murph Pollin B.S. 1944, U.S. Military Academy M.S. (E.E.) 1949, University of Pittsburgh M.S. 1954, Rensselaer Polytechnic Institute	Ill.	*Richard Jackson Selman B.S. 1938, Parsons College LL.B. 1941, Drake University	Iowa
*John Brayton Pollock B.S. 1956, St. Mary's College, California	Ala.	*James Alvin Shannon B.S. 1957, University of Maryland	Va.
*Frederick B. Porter, Jr. B.S. 1944, U.S. Military Academy	Colo.	*John Lewis Sherburne A.B. 1949, University of New Hampshire	N.H.
*James Richard Powell, Jr. B.S. 1950, U.S. Naval Academy	N.Y.	*Robert Williams Shick A.B. 1940, University of California	Calif.
*John Joseph Powers, Jr. B.S. 1945, U.S. Military Academy	D.C.	*Jack Sides Graduate 1948, U.S. Air Force Institute of Technology	Texas
*Gordon Charles Preller B.S. 1955, University of Maryland	Conn.	Yaro James Skalnik A.B. 1940, Western Reserve University	Va.
*John Paul Preston B.S. 1936, U.S. Naval Academy	Wash.	*Alfred Anderson Smith B.S. 1953, U.S. Naval Academy	Fla.
*James Laird Price B.S. 1952, University of Maryland M.B.A. 1957, Syracuse University	Texas	*Harold Stanhope Smith LL.B. 1948, University of Florida	Fla.
*Arthur Henry Rasper, Jr. B.S. 1943, U.S. Military Academy	Ohio		

\*Degree awarded September 30, 1964.

*Jeffrey Greenwood Smith B.S. (C.E.) 1943, Virginia Military Institute M.S. (M.E.) 1949, Johns Hopkins University	Va.	*Otto Darby Tilderman B.S. 1960, U.S. Naval Postgraduate School	R.I.
*Joseph Collins Smith B.S. 1953, U.S. Naval Academy	Tenn.	*John Mark Tierney B.S. 1945, U.S. Naval Academy	Del.
*Richard Carl Smith B.S. 1952, U.S. Naval Academy	Pa.	*James Brierton Townsend, Jr. B.S. 1945, U.S. Military Academy	Kans.
*Charles Raymond Sniffin B.S. in Ed. 1955, University of Georgia	Fla.	*Dan Medaries Trimble B.S. 1956, U.S. Naval Postgraduate School	La.
*Sidney Sober A.B. 1939, City College, New York	Pa.	*Lucian King Truscott III B.S. 1945, U.S. Military Academy	Hawaii
*John Stevens Sollosi B.S. (S.S.) 1941, Niagara University	Fla.	*Joseph Merit Tully, Jr. B.S. 1941, U.S. Naval Academy	Fla.
*Kenneth Souleyret B.S. 1949, University of Maryland	Va.	*Jack Aller Vaughan B.S. 1946, Northwestern University	Fla.
*Joseph Peeler Stabler B.S. 1943, U.S. Military Academy	N.H.	*John Baker Wadsworth, Jr. B.S. 1948, U.S. Military Academy	Iowa
*A.M. 1949, University of Virginia		*Sam Sims Walker B.S. 1946, U.S. Military Academy	Texas
*LeRoy Samie Stanley B.S. 1942, Oklahoma State University of Agriculture and Applied Science	Pa.	*Edward Francis Walsh, Jr. B.S. 1943, Fordham University	Minn.
*Jesse Eldred Stay B.S. 1948, University of California at Los Angeles	Utah	*Wilburn Clarence Weaver B.S. 1956, University of Maryland	Texas
*Claude C. Stewart B.S. 1942, Agricultural and Mechanical College of Texas	Texas	David Anderson Webb B.S. 1944, U.S. Naval Academy	Wash.
*Glenn Charles Stock B.S. 1942, Northwestern University	Ill.	*Davis Long Webb B.S. 1950, U.S. Naval Academy	Calif.
*Elmer Thomas Stonecipher A.B. 1949, Tulane University of Louisiana	Ind.	*Cylde Ray Welch B.S. 1951, U.S. Naval Academy	Texas
*Dene Brian Stratton B.B.A. 1951, University of Washington	R.I.	*Frederick Welden A.B. 1934, Rutgers, the State University	Va.
*Reid Stringfellow B.S. 1949, U.S. Naval Academy	R.I.	*Richard Marshall Wells B.S. 1951, U.S. Military Academy	Conn.
*James Suttle A.B. 1955, Boston University	Pa.	*M.S. 1956, State College of Iowa	
*James George Sutton A.B. 1941, Brooklyn College	N.Y.	*Elmer Thompson Westfall B.S. 1945, U.S. Naval Academy	Ark.
*Henry Joseph Sylvia A.B. 1958, Tufts University	R.I.	*B.S. in E.E. 1948, Massachusetts Institute of Technology	
*Ballard Wing Tebo B.S. 1950, Tulane University of Louisiana	Calif.	*James Earl Whatton B.S. in F.S. 1941, Georgetown University	Pa.
*William Alan Temple B.S. 1946, U.S. Military Academy	Ind.	*Sheldon Harley Wheeler B.S.E.E. 1941, Purdue University	Ind.
*L.L.B. 1951, The George Washington University		*William Thomas Wilborn B.G.E. 1963, Municipal University of Omaha	Fla.
*Fred Worrell Terrell, Jr. B.S. 1950, U.S. Naval Academy	Del.	*Herndon Fauntleroy Williams A.B. 1947, University of North Carolina	N.Y.
*Paul Jerome Tetreault B.S. 1952, U.S. Naval Academy	Texas	*Wayland Whitney Williams A.B. 1942, Colgate University	Wyo.
*Alfred Francis Thompson B.S. 1942, Arkansas State College	Ark.	*Jackson Lemard Winchester A.B. 1952, Sacramento State College	Va.
*George Irwin Thompson A.B. 1952, University of California at Los Angeles	Calif.	*Branson LeHew Wood, Jr. B.G.E. 1960, Municipal University of Omaha	Va.
*Robert Crawford Thompson B.S. 1961, U.S. Naval Postgraduate School	N.Y.	*William Burbridge Yancey, Jr. B.S. 1946, U.S. Military Academy	Texas
*Gerald Francis Thummel A.B. 1946, University of California at Berkeley	N.J.	*Ray James Yantis B.S. 1942, Agricultural and Mechanical College of Texas	Pa.
*John Lucius Tibbits A.B. 1959, Long Island University	Ala.	*William Raymond Yetman B.S. 1952, University of South Carolina	Conn.
		*B.S. 1959, U.S. Naval Postgraduate School	
		*Paul Alexander Yost B.S. 1951, U.S. Coast Guard Academy	
		M.S. 1959, University of Connecticut	

JUNE 6, 1965

James Thomas Alexander, Jr. B.S. 1941, U.S. Naval Academy B.S. in M.E. 1948, U.S. Naval Postgraduate School	Pa.	John Page Barker B.S. in Mil.Sc. 1960, University of Maryland	Pa.
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\*Degree awarded September 30, 1964.

100 DEGREES CONFERRED

Allen Mitchell Burdett, Jr. B.S. 1943, U.S. Military Academy	N.C.	Lawrence Paul Mayland B.S. 1959, University of Maryland	Calif.
Duncan Angus Campbell B.S. 1936, St. John's University, Minnesota	Fla.	John Henry Meyer B.S. 1939, U.S. Military Academy	Fla.
Victor George Conley B.S. 1940, U.S. Military Academy	Calif.	Donald John O'Meara B.S. 1939, U.S. Naval Academy	Idaho
Richard Walsh Dempsey B.S. in Ed. 1941, Northwest Missouri State College	Mo.	M.S. in Aero. Eng. 1946, Aero. Eng. 1947, California Institute of Technology	
Walter Alfred Divers B.S. 1942, U.S. Military Academy	Va.	Robert William Schafer A.B. 1938, M.S. in P.A. 1939, Ohio State University	Ohio
Robert Edwin Drake A.B. 1948, Carleton College	Md.	Earl Robert Schwass A.B. 1942, Northwestern University	R.I.
James Samuel Elkins, Jr. B.S. 1940, U.S. Naval Academy	Ga.	L.L.B. 1949, Georgetown University	
Francis Edward Field B.S. 1945, U.S. Naval Academy	Wyo.	Richard Raymond Shoop B.S. in Mil.Sc. 1953, University of Maryland	Ohio
Raymond Alvin Fitjar B.S. 1943, North Dakota State University	Texas	John Sim Slaughter B.S. 1933, U.S. Naval Academy	Okla.
Walter Greenwood, Jr. A.B. 1940, Virginia Military Institute	Conn.	William Garrett Stewart B.S. 1945, U.S. Military Academy	Mo.
Brian Sainsbury Gunderson B.S. in Mil.Sc. 1959, University of Maryland	Va.	M.S. 1953, Harvard University	
Bennett Lee Jackson B.S. in Mil.Sc. 1956, University of Maryland	D.C.	Samuel Gibbs Taxis B.S. 1931, U.S. Naval Academy	Va.
M.S. 1963, University of Wisconsin		Giles Crowder Upshur, Jr. A.B. 1964, The George Washington University	Va.
Arlo James Jensen B.S. in Eng.Phys. 1961, University of Colorado	Iowa	William Mulford Van Harlingen B.S. 1939, U.S. Military Academy	Pa.
John Dobson Kidd B.S. 1944, U.S. Naval Academy	Fla.	M.S.E. 1952, University of Michigan	
Edward Charles Krebs, Jr. B.N.S. 1946, College of the Holy Cross	Ohio	Merriwell William Vineyard Edward L. Waddell, Jr. B.S. in Ch.E. 1942, West Virginia University	Texas W.Va.
Raymond LaVerne Latimer B.S. 1941, University of Illinois	Ill.	M.Adm.Eng. 1948, New York University	
		Harian Dale Williams B.S. 1944, U.S. Naval Academy	Fla.

## MASTER OF SCIENCE IN INTERNATIONAL AFFAIRS

FEBRUARY 22, 1965

William Overton Gall B.S. in B.A. 1939, Ohio State University	Va.	Edward Frederick Rodriguez B.S. 1964, University of Maryland	Texas
Herbert Stinson Graves B.S. 1938, U.S. Naval Academy	R.I.	Orville Stanford Sigurdson B.S. M.S. 1954, U.S. Naval Post- graduate School	S.D.
Randolph Meade, Jr. B.S. 1936, U.S. Naval Academy	Calif.		

JUNE 6, 1965

Robert Edward Keating Ph.B. 1940, University of Wisconsin	Fla.	Thomas James Porcari B.M.E. 1949, Ohio State University	N.Y.
James Theron McDaniel A.B. 1965, The George Washington University	Calif.	Louis Boisseau Williams B.S. 1955, Florida Southern College	Calif.
		Ernest Jerome Zellmer B.S. 1943, U.S. Naval Academy	Md.

## MASTER OF BUSINESS ADMINISTRATION

FEBRUARY 22, 1965

*Walter Gordon Allen B.S. 1945, U.S. Military Academy	Ohio	*Billingsley Beatie B.S. 1951, Oregon State University	Wash.
*Coleman Lee Baker B.S. in Ch.E. 1951, Purdue University	Texas	*Frank Austin Buchanan, Jr. B.S. 1960, University of Maryland	Tenn.

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Orman Goodyear Charles E.E. 1932, Cornell University	Va.	*John Joseph Nolan A.B. 1948, Maryknoll Seminary	N.Y.
*James Cronan Egan, Jr. B.S. 1953, Municipal University of Omaha	Texas	*Boyce Harrison Pinson B.S. 1940, Wofford College	Ga.
*David Lawrence Gray B.S. in B.A. 1958, University of Colorado	Idaho	*Ernest Hughes Rickard A.B. in Com. 1948, San Jose State College	Calif.
Howard Earl Greet B.S. 1943, U.S. Naval Academy	Texas	*Bernard Rubinstein B.S. in M.E. 1932, New York University	Va.
*Ployer Peter Hill B.S.M.E. 1948, Massachusetts Institute of Technology	Fla.	L.L.B. 1941, The George Washington University	
William Arthur Kiernan A.B. 1963, The George Washington University	Va.	Gerald Sherman B.B.A. 1940, City College, New York	N.J.
*Dante Rudolph Marzetta B.S. 1941, U.S. Naval Academy	Ill.	*Henry Simon B.S. 1948, Rutgers, the State University	N.J.
M.S. 1946, Carnegie Institute of Technology		A.M. 1962, The George Washington University	
James Warren Moon B.S. in Mil.Sc. 1951, University of Maryland	Wash.	*Robert Ronold Sparks B.S. in B.A. 1941, University of Southern California	Ill.
*Ainsley Thomas Neiss, Sr. B.S. 1959, University of Maryland	Minn.	*LeRoy Len Stefan A.B. 1948, Stanford University	N.D.
*Donald Roy Nicholas B.S. 1950, Texas Agricultural and Mechanical College	Texas	*Donald Brunhoff Swenholt B.S. 1948, U.S. Military Academy	Va.

JUNE 6, 1965

Kenneth George Robinson B.S. 1938, U.S. Naval Academy	Va.
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## MASTER OF SCIENCE IN BUSINESS ADMINISTRATION

FEBRUARY 22, 1965

*James Lloyd Abbot, Jr. B.S. (E.E.) 1939, U.S. Naval Academy	Fla.	*Richard Joseph Bono B.G.E. 1960, Municipal University of Omaha	Mo.
*Fred Ernest Alpers B.S. 1954, University of Nevada	Nev.	*Dale Willard Brink B.S. 1949, University of California at Berkeley	Ohio
*George Hamilton Andrews B.S. in C.E. 1947, Carnegie Institute of Technology	Ill.	*Ralph Leon Brooks B.G.E. 1963, Municipal University of Omaha	Texas
*Richard William Aronson B.S. 1958, University of Maryland	Wash.	*Morris Carl Brunton B.S. in B.A. 1950, Indiana University	Ind.
*Robert Madison Atkisson B.S. in B.A. 1950, University of Oklahoma	Okla.	*Paul Wesley Buehler L.L.B. 1951, University of North Dakota	N.D.
*Clentis William Bailey B.S. in C.E. 1953, Mississippi State University	Miss.	*Richard Terry Bull B.S. Ind.Eng. 1942, Virginia Polytechnic Institute	Nebr.
*Michael William Balok B.S. in Mil.Sc. 1960, University of Maryland	Mich.	*John Lonergan Burke B.S. 1943, U.S. Naval Academy	Oreg.
*Merle Eugene Banaszak B.S. in B.A. 1952, University of Florida	Fla.	B.C.E. 1947, M.C.E. 1948, Rensselaer Polytechnic Institute	
*James Larry Beason B.S. in B.A. 1951, Louisiana Polytechnic Institute	La.	*Joe Howard Burns B.S.Bus.Ed. 1952, University of Idaho	Idaho
*Joe Dan Blahop B.B.A. 1953, North Texas State University	Texas	*Stuart Edwin Burt A.B. 1948, A.M. 1957, Whittier College	Calif.
*Dale Austin Bittinger A.B. 1951, Ohio Wesleyan University	Ohio	*David Smith Chamberlain B.S. 1943, U.S. Military Academy	Ohio
*Odell Sirle Black B.S. 1953, University of Idaho	Idaho	M.S. in C.E. 1947, University of Illinois	
*James Jay Blessing A.B. 1952, Lake Forest College	Ill.	*John Thomas Conley B.S. 1953, U.S. Naval Academy	Wyo.
*Jack Philip Blomgren B.B.A. 1960, University of Oklahoma	Texas	M.S. in E.E. 1959, University of Illinois	
		*Dean Amos Cook B.S. in C.E. 1952, University of Utah	Utah
		*Daniel Francis Coogan A.B. 1952, College of the Holy Cross	Mass.

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102 DEGREES CONFERRED

*Raymond Edwin Coursin B.S. 1959, Little Rock University	Ohio	*Jack Gilbert Hilden B.S.Ch.E. 1952, University of Wisconsin M.S.E. 1954, University of Michigan	Wis.
*Dean C. Crane B.S. 1957, Oklahoma State University of Agriculture and Applied Science	N.Y.	*Donald Thomas Hogg B.S. 1954, Bradley University	Ill.
*Fred J. Cuthill B.S. 1951, Washington State University	Calif.	*Raymond Leslie Hope, Jr. A.B. 1951, West Virginia University	W.Va.
*Riley Davis DeMasie B.S. 1950, Butler University	Ind.	*Charles Thomas Howard B.S. 1950, U.S. Naval Academy B.E.E. 1958, Ohio State University	Pa.
*James Madison Dunn, Jr. B.G.E. 1963, Municipal University of Omaha	Fla.	*Berlin Blaine Huffman B.S.C. 1950, University of Virginia	Va.
*Jack Hodge Eaton, Jr. B.B.A. 1961, University of Texas	Tenn.	*Donald Everett Hunt A.B. 1953, Boston University	Texas
*William Henry Eckhart B.S. in M.E. 1938, Rhode Island College	N.H.	*Keith Warren Jackson B.S. 1961, Arizona State University	Mass.
*Dayton Willis Eddy B.S. (E.E.) 1937, University of Vermont	Pa.	*Donald Martin Jewell B.S. 1956, M.S. in C.E. 1961, University of Illinois	Mich.
*John W. Elder B.S. in Mil.Sc. 1963, University of Utah	Wash.	Richard Andrew Johnston A.B. 1951, University of Wichita	Kans.
*Edmund Barber Edwards B.S. 1943, U.S. Military Academy	Texas	*John Leo Kauth A.B. 1948, University of Minnesota	Pa.
*Billy Joe Ellis B.S. 1951, U.S. Military Academy	La.	*Raymond Frederick Kayea, Jr. A.B. 1963, University of Maryland	Nev.
*Joseph Roland A. Ethier A.B. 1951, New York University	R.I.	*George Joseph Kertesz A.B. 1963, Oklahoma State University of Agriculture and Applied Science	Calif.
*Dellie LeRoy Ferris B.S. 1954, Arizona State University	Ariz.	George D. King, Jr. B.S. 1957, Florida Southern College	Fla.
*Thomas Carroll Finnie B.S. in C.E. 1940, University of Kentucky	Mo.	*James Fitzhugh Koonce B.S. in Ch.E. 1952, University of Arkansas	Ark.
*John Levi Fisher B.S. 1951, Wilmington College, Ohio B.S. (Aero) 1957, Air Force Institute of Technology	Ohio	*Norman Charles Lamb B.S. 1949, University of Oregon	Oreg.
*Francis John Fitzpatrick B.S. in E.E. 1939, U.S. Naval Academy	Calif.	Michael Anthony Leone B.S.E.E. 1960, Drexel Institute of Technology	Va.
*Phillip H. Fryberger B.S. 1946, U.S. Military Academy	Pa.	*James Edwin Light, Jr. B.S. 1956, Michigan State University	Mich.
*Charles Bernard Fyock B.S. (M.E.) 1951, University of Maryland	Fla.	*Patrick Gilbert Long B.S. 1951, St. Louis University B.S. in E.E. 1960, University of New Mexico	Mo.
*Edward Frederick Gehrke B.S. in B.A. 1951, Ohio State University	Ohio	*John Henry Ludwig B.S. 1951, Agricultural and Mechanical College of Texas	Texas
*William Richard Gilmore B.S. 1954, U.S. Naval Academy	Calif.	*Bradley Truett Lutz B.S. 1960, University of Maryland	Miss.
*Clarence Bernhardt Goldacker B.S. 1952, University of Pittsburgh	Pa.	*Melville Alfred Madsen B.B.A. 1952, Baylor University	Texas
*Orville LeRoy Greynolds A.B. 1952, Ohio State University	Ohio	*Lawton Wood Magee B.S. 1950, U.S. Naval Academy	Texas
*Robert Zeno Grimes B.S. 1954, University of Maryland	Va.	*John Boyd Marks B.S. in E.E. 1951, University of Southwestern Louisiana	La.
*Edward Joseph Gulder A.B. 1949, Western Michigan University	Mich.	*Dwight Emmons Mason B.G.E. 1960, Municipal University of Omaha	Calif.
*Richard Paul Guidroz B.S. 1951, U.S. Military Academy	La.	*Allen D. Maxwell A.B. 1949, American University	Ala.
*Robert Rudolph Hafner B.S. 1963, Long Island University	Oreg.	*Maynard Lee Mayberry B.S. in Ed. 1951, Kansas State Teachers College	Kans.
*Harry Taylor Hagaman A.B. 1961, University of Colorado	Colo.	*John William McConville B.B.A. 1959, University of Alaska	Ill.
*Carl Gordon Hallin B.S.B.A. 1951, Boston University	Mass.	Philip Hunter McCorkle B.S. 1940, Clemson University	S.C.
*Harold Thomas Hamilton B.S.B.A. 1951, University of Arkansas	Ark.	*Ralph Eugene McGrew B.S. 1953, Kansas State University	Kans.
*John Ingram Hammonds, Jr. B.S. in Ind.Ed. 1949, Texas Agricultural and Mechanical College	Texas	*Alfred Leslie Miller, Jr. B.B.A. 1951, University of Texas	Texas
*William Brevard Hankins, Jr. B.S. 1945, U.S. Military Academy	N.C.	*Horace Watkins Miller B.S. in P.E. 1952, University of Southern Mississippi	Miss.
*Robert Chester Harding B.S. 1951, U.S. Naval Academy M.S. in C.E. 1955, Purdue University	Ark.	*Robert Luther Miller III B.S.M.E. 1952, North Carolina State College of Agriculture and Engineering	N.C.
*Teague Gray Harris, Jr. A.B. 1940, Furman University B.S. 1943, U.S. Military Academy	S.C.		
*William Harold Hatfield B.S. 1952, Mississippi State College	Miss.		

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*William Edward Miller	Ohio	*Otis Dale Shaw	Wash.
B.S.C. 1951, Ohio University		A.B. 1951, Washington State University	
*William Rousch Mook	Nebr.	Thomas Webster Sherman, Jr.	N.Y.
B.S.B.A. 1950, University of Nebraska		B.S. 1951, U.S. Naval Academy	
*Harry Arthur Morris	Calif.	*Frank Wilson Shipman, Jr.	Nebr.
B.S. in B.A. 1951, Menlo College		B.S. in B.A. 1948, University of Nebraska	
*George Edward Morrissey, Jr.	D.C.	*Augustine W. Smith	Fla.
B.S. 1950, U.S. Military Academy		B.S. 1943, U.S. Naval Academy	
M.E.A. 1961, The George Washington		*Harry French Smith, Jr.	Ohio
University		A.B. 1951, Ohio State University	
*William Franklin Morrow, Jr.	Fla.	Howard Clayton Smith	Va.
B.S. in B.A. 1951, Florida State University		B.S. 1940, Trenton State College	
*Louis George Neuner, Jr.	Calif.	*Howard Persons Smith, Jr.	Ia.
B.S. in E.E. 1958, University of		B.G.E. 1963, Municipal University of	
Oklahoma		Omaha	
*Franklin Delano Newsom	Miss.	*James Stanley Smith	Mich.
B.S. 1954, Mississippi State University		A.B. 1948, Michigan State University	
*Wesley A. Newsome, Jr.	Md.	M.S. 1950, Columbia University	
B.S. 1954, U.S. Naval Academy		Eugene William Snell	Fla.
M.S. in E.E. 1960, University of Illinois		B.S. in Ed. 1953, University of Akron	
Harry Ellis Noll	Kans.	*Fred Raymond Spies	Ill.
B.S. in B.A. 1951, Kansas State University		B.G.E. 1960, Municipal University of	
of Agriculture and Applied Science		Omaha	
*Francis Richard O'Clair	Mass.	*Edward Stellini	Mich.
A.B. 1950, American International College		B.F.A. 1950, Wayne State University	
A.M. 1958, Miami University		*Donald Webb Stewart, Jr.	Fla.
*Harry Chandler Olson	Ohio	B.S. 1950, U.S. Merchant Marine	
A.B. 1941, Drake University		Academy	
*Peter Charles Palazzolo	Ill.	*James Arthur Street	Mo.
B.S. 1959, Florida Southern College		B.S. in Met.Eng. 1950, University of	
*Wallace Davidson Pardue	Tenn.	Kansas	
B.S. 1960, University of Maryland		*John Bailey Taylor	Minn.
*Robert Owen Petty	Texas	A.B. 1952, Oklahoma State University of	
B.S. 1953, Texas Agricultural and		Agriculture and Applied Science	
Mechanical College		*John Carl Taylor	Texas
*Ralph Stanley Pittman	N.C.	A.B. 1960, Boston University	
B.S. 1951, University of North Carolina		*William Robert Thomas	Nev.
*Lester Francis Rentmeester	Wis.	B.S. 1954, U.S. Military Academy	
Graduation 1948, Air Force Institute of		*Alastair William Thompson	Ohio
Technology		B.S. in B.A. 1952, Kent State University	
*John Robert Rhodehamel	Ohio	*Verney LeRoy Thorlton	Okla.
B.S.Ch.E. 1956, Rose Polytechnic		B.S. 1957, Oklahoma State University of	
Institute		Agriculture and Applied Science	
*Norman Neal Richardson	Texas	*Robert Edwin Todd	Okla.
A.B. 1952, Hardin-Simmons University		B.S. 1950, University of Oklahoma	
M.S. 1954, Pennsylvania State University		*Frederick Charles Turner	N.J.
*Edward Bailey Richter	N.Y.	B.S. 1961, University of Maryland	
B.S. 1952, U.S. Naval Academy		*Thomas H. A. Turner, Jr.	Calif.
M.S.E.E. 1958, Air Force Institute of		B.S. 1959, University of Maryland	
Technology		*George Edward Tyler	Ala.
*James Hinds Rigney, Jr.	Fla.	B.S. 1953, U.S. Naval Academy	
B.S. 1959, Florida State University		*Daniel Philippi VanSickel	Pa.
Ralph Allan Rittman	Minn.	B.S. 1953, Pennsylvania State University	
B.S. 1950, U.S. Military Academy		*Lawrence Willard Vogel	Ill.
*George Bernard Robbins, Jr.	N.C.	B.S. 1942, U.S. Military Academy	
B.S. 1962, University of Maryland		M.S. in C.E. 1949, University of Iowa	
*Charles Kenneth Rose III	Pa.	*Harold Vincent Walsh	N.J.
A.B. 1950, Duke University		B.S. 1950, U.S. Naval Academy	
*Allen Claire Rozsa	Calif.	*William Alexander Whitman	Wash.
B.S. M.E. 1961, University of New		B.S. in M.E. 1948, U.S. Naval Post-	
Mexico		graduate School	
*John Aloysius Ryan, Jr.	N.Y.	*Paul Louis Wieland	Ill.
B.S. 1942, U.S. Military Academy		A.B. 1962, University of Illinois	
M.S. 1946, Massachusetts Institute of		*Paul Arnold Wilcox	N.H.
Technology		B.S. 1949, University of New Hampshire	
*Donald LaVern Sanxter	Ind.	Nelson Noah Williams, Jr.	Ky.
B.B.A. 1954, University of Pittsburgh		B.S. 1949, Murray State College	
*Charles Kenneth Schmidt	Conn.	*Clark Lee Wingate	Nev.
B.S. 1943, U.S. Naval Academy		B.S. in B.A. 1950, University of Denver	
*Arthur Henry Schroder	Texas	*Charles Alvin York	Iowa
B.S. 1953, U.S. Naval Academy		B.S.C. 1952, University of Iowa	
*William Hayward Schwoob	N.Y.	*Theodore Robert York	Idaho
B.S. 1950, U.S. Military Academy		B.S. 1950, U.S. Military Academy	
*Glenn Damian Seanger	Minn.		
B.S. 1950, St. Cloud State College			

\*Degree awarded September 30, 1964.



## JUNE 6, 1965

Robert Frank Adams	Idaho	David Gilbert Halm	Texas
B.S. in M.E. 1949, University of Idaho		B.S. in I.E. 1962, Texas Agricultural and Mechanical University	
Norfleet Reid Cheek	Fla.	Allan Sutter	Va.
A.B. 1963, University of Maryland		A.B. 1937, Dartmouth College	
Richard Martin Clark	Ohio	Walter Shelby Van Cleave	Texas
B.S. in B.A. 1943, Kent State University		B.Gen.Ed. 1957, Municipal University of Omaha	
Lloyd Irving Cooney	N.M.		
B.S. 1963, Northwestern State College			
Daniel Edward Guidice	Fla.		
B.S. in Com. 1949, The Citadel			

## MASTER OF SCIENCE IN FINANCIAL MANAGEMENT

### FEBRUARY 22, 1965

James Robbie Anderson	Oreg.	Edward Kristian Pedersen	Va.
B.S. 1939, Oregon State University		A.B. 1962, The George Washington University	
Chester John Chojecki	Md.	Vernon David Thomason	N.C.
B.S. in Mil.Sc. 1956, A.B. 1962, University of Maryland		A.B. 1961, The George Washington University	
Dee Earl Ezell	Texas	Edwin Arthur Wood	Fla.
B.S. in Ed. 1944, Texas Christian University		B.S. in B.A. 1955, Ohio State University	
A.M. 1964, The George Washington University			

## JUNE 6, 1965

John Eugene Dexter	Pa.	Robert Francis Stanton Terrill	Va.
A.B. 1961, University of Maryland		A.B. 1963, University of Maryland	
Francis William Haskins	Pa.	William Alfred Wood	Md.
A.B. 1953, Villanova University		B.S.E. 1956, University of London, England	
James Robert Klusendorf	Ill.		
A.B. 1961, Monmouth College			

## MASTER OF SCIENCE IN GOVERNMENTAL ADMINISTRATION

### FEBRUARY 22, 1965

James Robert Evans	Calif.	Ruth Elizabeth Quinlan	Mass.
A.B. 1953, University of California		A.B. 1953, The George Washington University	

## JUNE 6, 1965

Charles George Aschmann, Jr.	Va.	Duane C. Wright	Md.
A.B. 1941, Yale University		A.B. 1947, Adrian College	
Frederick Warburton Joy, Jr.	N.J.		
B.S. 1949, Cornell University			

## MASTER OF PUBLIC ADMINISTRATION

### FEBRUARY 22, 1965

*Clarence Newton Kennedy	N.Y.	Julius Ceasar Pearson, Jr.	La.
B.S. 1941, Cornell University		A.B. 1951, Tulane University of Louisiana	
*Richard Yates Newton, Jr.	Fla.	*Larkin Smith Tully	Texas
B.S. 1950, U.S. Military Academy		B.S. 1944, U.S. Military Academy	

\*Degree awarded September 30, 1964.

# MASTER OF SCIENCE IN PUBLIC ADMINISTRATION

FEBRUARY 22, 1965

*Charles Lee Royal Anderson A.B. 1951, Princeton University Robert Lawrence Andreason B.S. 1950, Utah State University of Agriculture and Applied Science	Conn. Calif.	*Rolf Adolf Hanning B.S.Ch.E. 1953, Newark College of Engineering	N.J.
*Joseph Clair Austin B.S. 1952, U.S. Military Academy M.S. 1958, Carnegie Institute of Technology M.S. 1962, New York University	W.Va.	*Jack Howard Harper, Jr. B.S. 1952, Mississippi State University	Miss.
*William Gardner Bastedo B.S. in Mil.Sc. 1952, University of Maryland	N.J.	*Orville John Howells B.G.E. 1963, Municipal University of Omaha	Nebr.
*Stanley Clifton Beck B.S. 1954, U.S. Military Academy	Ariz.	*Calvin Thomas Hunt A.B. 1948, Cornell University	N.Y.
*George Graham Beveridge B.S. 1952, Oregon State University	Calif.	*Delmar Guthrie Jacobs B.S. Entomology 1951, Washington State University	Texas
*Donald Dean Binford B.S. (Ed.) 1954, Agricultural and Mechanical College of Texas	Kans.	*Lawrence J. Johnson B.B.A. 1960, Texas Technological College	Texas
*Robert Bell Black B.S. in B.A. 1953, University of Florida M.B.A. 1961, University of Michigan	Fla.	*John Elonzo Jolley, Jr. A.B. 1949, University of Chattanooga	Tenn.
Ronald Eugene Black B.S. 1950, University of Illinois	Ala.	*Richard LaVerne Lawson B.S. 1951, Parsons College	Iowa
*Eugene Chester Boroski B.S.Arch.Eng. 1950, University of Illinois	Ill.	*Robert G. Liotta A.B. 1960, University of Vermont	Conn.
Morris Frederick Briggs B.S. 1951, Kansas State University	Kans.	*George Cotchett Lynch A.B. 1953, Duke University	Texas
*William Beverly Bowles A.B. 1952, Mercer University	Ga.	*Theodore Nelson Mace A.B., B.S. 1960, University of Washington	Calif.
*Theodore Dale Broadwater A.B. 1952, University of Pittsburgh	Pa.	*Leon Gilbert Mark A.B. 1960, Western State College of Colorado	Colo.
*James Leon Brown B.S. 1951, Texas Agricultural and Mechanical College	Texas	*Paul Brice Martin B.S. 1951, U.S. Naval Academy	Texas
*Louis Cass Buckman B.S. 1954, University of Missouri	Mo.	*Edmond Robert McCarthy A.B. 1952, Fordham University	N.Y.
*Tommy Francis Butler B.S. 1961, University of Maryland	Kans.	*Robert Joseph McClellan A.B. 1963, Municipal University of Omaha	Ala.
*Jesse Casaus A.B. 1961, University of California	N.M.	*Ronald Earl Mintz A.B. 1948, University of North Carolina	N.C.
*Steve S. Chag B.S. 1943, University of New Hampshire	Texas	*Robert Lee Mize B.S. in Ed. 1950, Southeast Missouri State College	Ind.
*Donald Lee Clark A.B. 1951, Southern Methodist University	Texas	*John Walter Mudie A.B. 1948, University of Michigan	Mich.
*Wilmer Frederick Cline A.B. 1951, Indiana University A.M. 1963, Sacramento State College	Md.	*Robert Melvin Nelson B.S. in Ed. 1952, Illinois State Normal University	Ill.
*Melvin Gerald Cooper LL.B. 1950, University of Tennessee A.M. 1961, West Virginia University	Tenn.	*Luis G. Oliver B.S. in Mil.Sc. 1957, University of Maryland	Mich.
*Thomas Glenn Darling B.S. 1954, Texas Agricultural and Mechanical College	Texas	*James Russell Olson B.S. 1953, U.S. Naval Academy	Iowa
*Leonard John Davidek A.B. 1952, West Liberty State College	Ala.	*Jerome Joseph Palermine A.B. 1959, University of the Philippines	N.J.
*Vincent Anthony DiMauro A.B. 1949, Rutgers, The State University	N.J.	*Michael John Paroby A.B. 1954, University of Alaska	Pa.
*Charles Lawthers Donnelly, Jr. A.B. 1950, Otterbein College	Ohio	*John Roberts Paulk B.S. 1962, University of Georgia	Ga.
*Dudley John Foster B.S. 1959, Pennsylvania State University	N.H.	*Guy Dorman Perham B.S. 1951, Washington State University	Wash.
*Donald Franklin Gaylor A.B. 1953, East Carolina College	N.C.	*Frederick Sherwood Phillips A.B. 1952, University of Illinois	Iowa
John Simon Gleason, Jr. B.C.S. 1936, University of Notre Dame	Ill.	*Donald Marvin Rowland A.B. 1949, Washington University	Mo.
*Darr Lee Goss B.S. 1956, University of Oregon	Ala.	James Benford Sanders A.B. 1960, San Francisco State College	Ariz.
*Jack Irvin Gregory B.S. 1953, University of Kentucky	Colo.	*Thomas Edward Schaefer B.S. in B.A. 1953, Lehigh University	N.Y.
		*Robert Rilling Sheahan B.S. 1953, U.S. Naval Academy	Tenn.
		*William Weller Shipp A.B. 1953, University of California at Berkeley	Calif.

\*Degree awarded September 30, 1964.

*Harrold Southard Shippe, Jr. B.S. in Ed. 1949, Ed.M. 1960, Massachusetts State College, Bridgewater	Mass.	*Jack Edgar Tullett B.S. 1950, Bradley University A.M. 1952, University of Texas	Ill.
*George Martin Simpson B.S. in Ind.Mgmt. 1951, University of Arkansas	Ark.	*Emmett Sanders Walden, Jr. B.S. 1952, Florida State University	Fla.
*Edwin Luther Smith B.S. 1949, University of Florida	Fla.	*James Arthur Watkins A.B. 1963, Southern Illinois University	Texas
*Daniel Harrison Tate B.S. 1952, Sam Houston State Teachers College	Texas	*Donald Everett Wessen B.S. in C.E. 1951, New England College	N.H.
		*Dwayne Penrose Wright B.S. 1953, Utah State University of Agriculture and Applied Science	Wyo.

## JUNE 6, 1965

Cyril Francis Brickfield LL.B. 1948, Fordham University LL.M. 1953, S.J.D. 1957, The George Washington University	Md.	Irene Parsons B.S. in Bus.Ed. 1941, University of North Carolina	D.C.
William Joseph Driver B.B.A. 1941, Niagara University LL.B. The George Washington University	Va.	Clifford Durwood Price A.B. 1957, Baylor University	Texas
Raymond Manly Finney B.S. 1949, University of Colorado	Calif.	Paul Norman Schmoll B.S.C. 1938, University of North Dakota	Md.
Edward Joseph Gorman A.B. 1936, Boston College	Mass.	Lowell Gray Schweickart B.S. in Arch. 1929, University of Cincinnati	Va.
Joe Mason Hansman B.J. 1929, University of Missouri	Va.	James Whitehurst Stancil LL.B. 1941, Southeastern University	D.C.
Lester James Hook LL.B. 1939, Southeastern University	Md.	Vernon Orville Trygstad B.S. 1936, North Dakota State University	Md.
James Harrison Hubbell A.B. 1938, Oberlin College A.M. 1940, University of Cincinnati	Md.	Blake E. Turner A.B. 1947, Monmouth College	Va.
Andrew Thomas McAnsh B.S. in Mil.Sc. 1961, University of Maryland	D.C.	Leon Milton Wallace A.B. 1934, Dillard University	D.C.
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Albert Herschel Monk B.S. in B.A. 1931, University of Missouri	Va.	A.M. 1934, University of Southern California	

## MASTER OF SCIENCE IN PERSONNEL ADMINISTRATION

### FEBRUARY 22, 1965

John William Adams, Jr. B.S. in I.M. 1961, Georgia Institute of Technology	Ga.	Charles Gregory Nolan B.S. 1959, U.S. Naval Academy	N.J.
Albert Cannon Baker, Sr. A.B. in Govt. 1957, The George Washington University	Va.	Thane Navarr Olson A.B. 1959, University of Southern California	Calif.
Jesse William Cornelius, Jr. B.S. 1952, Florida State University	Md.	John James O'Rourke A.B. 1949, Lake Forest College	Ill.
William Kyle Davenport B.S. 1936, U.S. Naval Academy	Md.	Harry Edward Trigg B.G.E. 1961, Municipal University of Omaha	Nebr.
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Robert Louis Howard A.B. 1960, Johns Hopkins University	Md.		

\*Degree awarded September 30, 1964.



## JUNE 6, 1965

H. Donald Bryant	N.Y.	Dean Christopher Millar	Md.
A.B. 1956, Miami University		A.B. 1961, Beloit College	
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B.S. in Bus. 1962, Miami University		A.B. 1963, The George Washington University	
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B.S. in B.A. 1956, Ohio State University		B.S. 1942, Virginia Polytechnic Institute	
George Thomas Dyer, Jr.	Maine	Robert Aloysius Scherrer	Va.
B.S. 1952, U.S. Naval Academy		B.S. 1944, U.S. Naval Academy	
Gerald Leon Ehrens	Texas	Alan Richard Schrader	Md.
B.S.E. 1961, Princeton University		B.M.E. 1934, M.E. 1939, Ohio State University	
John William Ehrmantraut	Ill.	Dorcas A. Stearns	Nebr.
B.S. 1961, University of Illinois		A.B. 1948, University of Denver	
Randall James Foley	Va.	Harry Wallace Taylor	S.C.
D.V.M. 1942, Ohio State University		B.S. in Com. 1940, University of South Carolina	
Carroll Rhey Franklin	Mo.	Waymon Taylor	Texas
B.S. 1956, U.S. Naval Academy		A.B. 1964, The George Washington University	
Elinor Ruth Garay	Va.	Edmund Jeremiah Treacy	Calif.
Stephen Louis Garay	Ohio	B.S. 1945, U.S. Naval Academy	
A.B. 1961, San Jose State College		B.S. in E.E. 1955, U.S. Naval Postgraduate School	
Harold Eugene Gross	Tenn.	Doreen Jean Two	Ill.
B.S. 1953, U.S. Naval Academy		A.B. 1955, Monmouth College	
Walter Allen Gurley	Md.	Guy Davis Veasey	Calif.
B.I.E. 1952, North Carolina State University		B.S. 1958, U.S. Naval Academy	
David Joseph Helterbran	Pa.	Edward Robert Watson	Calif.
B.S. in Mil.Sc. 1961, University of Maryland		B.S. 1950, U.S. Naval Academy	
Richard Robert Horn	Pa.	B.S. 1963, U.S. Naval Postgraduate School	
A.B. 1952, Franklin and Marshall College		John Anthony White	Mo.
Selah Hawkins Howell	Texas	B.S. in Agr. 1940, University of Missouri	
B.S. in Mil.Sc. 1961, University of Maryland		William Joseph Winder	Okla.
James Charles Keenan, Jr.	Calif.	B.S. in M.E. 1941, University of Oklahoma	
A.B. 1963, University of Maryland		Joseph Orr Wintersteen, Jr.	Pa.
Thomas Alan La Forge	Conn.	A.B. in Com.Fin. 1949, Pennsylvania State University	
B.S. in Eng. 1960, University of Connecticut		Craig Joseph Wolf	Iowa
James Sharrocks Lampe	Va.	A.B. 1959, Catholic University of America	
B.S. 1963, University of Maryland		William Tyson Zale	D.C.
Morris Lieberman	Md.	B.S. in Mil.Sc. 1958, University of Maryland	
B.S. 1939, University of Pittsburgh		Robert Elmer Zinn	Del.
Donald Roy Lund	Iowa	B.S. in Bus. 1950, Miami University	
A.B. 1960, University of Iowa			
Stephen Joseph McArdle, Jr.	N.Y.		
A.B. 1963, U.S. Naval Postgraduate School			
Dale William Merkey	Pa.		
A.B. 1961, Albright College			

## The Graduate Council

### DOCTOR OF PHILOSOPHY

#### FEBRUARY 22, 1965

Oril Irene Brown	Pa.	John Joseph Collins	Md.
B.S. 1930, Northwestern University		A.B. 1949, University of Missouri	
A.M. 1951, The George Washington University		A.M. 1950, University of Georgia	
Dissertation: "A Study of Level of Aspiration in Six Psychiatric Conditions"		Dissertation: "An Experimental Study of Decision Rules in Diagnostic Problem Solving"	

*Joan Guynn Creager B.S. 1955, M.S. 1958, Trinity University Dissertation: "A Histochemical Study of Some Effects of Kidney Homogenates, Thyroxin, and Thiourea on the Chick Mesonephros"	Va.	*George Cooke Landon A.B. 1955, University of Buffalo A.M. 1956, University of Wyoming Dissertation: "Homestead Act— Attitudes and Reactions"	N.Y.
Robert Worley Delp B.S. 1947, Davidson College B.D. 1951, Lancaster Theological Seminary of the United Church of Christ A.M. 1959, The George Washington University Dissertation: "The Harmonial Philosopher: Andrew Jackson Davis, and the Foundation of Modern American Spiritualism"	N.C.	Harvard Reiter B.S. 1952, Queens College M.S. 1957, New York University Dissertation: "The Site of Action of Several Inhibitors of Bacteriophage Replication and the Role of the Host Cell in Bacteriophage Penetration"	Ill.
*Ruth Ann Ginsburg A.B. 1954, A.M. 1956, University of California at Berkeley Dissertation: "Some Specific Ion Effects on the Conformation and Thermal Stability of Ribonuclease"	Md.	Robert Hermann Shumway A.B. 1958, Carleton College M.S. 1960, Iowa State University of Science and Technology Dissertation: "An Information Theoretic Approach to the Problem of Discriminating Between Two Stochastic Processes"	Va.
*John Charles Hoffsommer A.B. 1954, University of Pennsylvania M.S. 1960, University of Maryland Dissertation: "Kinetics and Mechanism for the Reaction Between Alkyl Hydroperoxides and Tetranitromethane"	Md.	*Elizabeth Weiss Stephenson B.S. 1947, University of Chicago Dissertation: "Studies on Cation Distribution and Sodium Movement in Smooth Muscle"	Md.
*Peter William Kyriazis A.B. 1949, A.M. 1951, The George Washington University Dissertation: "The Relation Between Measured Hypochondriasis and Semantic Differential Profiles (Among College Students)"	Md.	John Michael Venditti B.S. 1949, M.S. 1957, University of Maryland Dissertation: "Studies in Experimental Therapeutics: Quantitative Evaluation <i>In vivo</i> of the Antileukemic Effectiveness of Phthalanilides and Related Compounds"	Md.
	Md.	Joseph Francis Worley B.S. 1955, M.S. 1958, The George Washington University Dissertation: "The Distribution of Southern Bean Mosaic Virus Antigen in Systemically- and Locally-infected Tissues as Indicated by Fluorescent Antibody"	D.C.

JUNE 6, 1965

George Michael Enteen A.B. 1954, Emory University A.M. 1958, Columbia University Dissertation: "M. N. Pokrovskii and the Society of Marxist Historians"	Pa.	Mahmoud Khairat Ahmed Khairat B.S. 1958, A'In Shams University, Egypt M.S. 1962, The George Washington University Dissertation: "Some Results for Random Elements Taking Values in a Linear Space"	Egypt
William Foster Grossnickle A.B. 1951, Duke University A.M. 1958, The George Washington University Dissertation: "Immediate Recall of Self-produced Strings of Instructions from Progressive, Regressive, and Nested Phrase-structure Derivations"	Va.	William Douglas Odell A.B. 1952, University of California, Berkeley M.S., M.D. 1956, University of Chicago Dissertation: "Radioimmunoassay of Thyrotropin (TSH) in Human Serum"	Md.
Gloria Mae Hammack B.S. 1958, M.S. 1960, The George Washington University Dissertation: "Gel Electrophoretic Studies on Hemolymph Proteins during Development and Yolk Deposition in <i>Periplaneta americana</i> (L), with Reference to the Role of the Corpora Allata"	D.C.	Jerome Leon Olans A.B. 1949, Brooklyn College A.M. 1950, Columbia University Dissertation: "The Dimensionality of Selected Thematic Apperception Test Cards"	D.C.
Sin Ai Hyun B.S. 1959, Seoul National University, Korea M.S. 1962, The George Washington University Dissertation: "Studies on the Intestinal Absorption of 2-Ethyl-n- Caproic Acid"	Korea	Lourdes Ortega A.B. 1960, A.M. 1962, The George Washington University Dissertation: "The Relationship of Level of Language Development to the Semantic Pattern of Schizophrenic and Normal Subjects"	Md.

\*Degree awarded September 30, 1964.

George Bernard Pelleu, Jr. B.S. 1951, University of Maryland M.S. 1957, The George Washington University Dissertation: "The Classification of Several Bacteriophages Isolated from the Tribe <i>Escherichae</i> and Their Mutants as Determined by Their Host Range Infectivity, Serological, and Morphological Characteristics"	Md.	William Earl Stahr A.B. 1951, A.M. 1953, University of Maryland Dissertation: "The Demand for an American Literature and Its Context, 1825-1835"	Md.
Hyman Rosenwasser A.B. 1936, Brooklyn College Dissertation: "Basic Rare Earth Azides"	Va.	Eldon Cole Whipple, Jr. B.S. 1955, Wheaton College, Illinois M.S. 1958, The George Washington University Dissertation: "The Equilibrium Electric Potential of a Body in the Upper Atmosphere and in Interplanetary Space"	Md.

## Honorary Degrees

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JUNE 6, 1965

---

Willard J. Graham—*Doctor of Laws*  
Daniel Jeremiah Haughton—*Doctor of Laws*

David Matthew Kennedy—*Doctor of Laws*  
Dean Rusk—*Doctor of Laws*







# THE GEORGE WASHINGTON UNIVERSITY BULLETIN

## The School of Engineering and Applied Science







*Tompkins Hall of Engineering*

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**THE SCHOOL OF ENGINEERING  
AND APPLIED SCIENCE 1965-66**

**WASHINGTON, D.C. 20006** *November 1964*

## CORRESPONDENCE DIRECTORY

Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Director of Admissions, The George Washington University, Washington, D. C. 20006.

Information concerning courses of instruction and the programs of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on page 83.

<i>General Admission</i>	Director of Admissions, Building C
<i>Law School Admission</i>	Dean of The Law School
<i>School of Medicine Admission</i>	1339 H Street NW.
<i>Air Science (ROTC)</i>	Director of Air Science, Chapin Hall
<i>Alumni Association</i>	Alumni Office, Bacon Hall
<i>Medical Alumni Association</i>	1335 H Street NW.
<i>Foreign Students</i>	Director of Foreign Student Affairs, Building T

### GRADUATE STUDY:

<i>Master's degrees in Arts and Sciences</i>	Dean of Columbian College of Arts and Sciences
<i>Doctor of Philosophy</i>	Dean of The Graduate Council
<i>In Education</i>	Dean of The School of Education
<i>In Engineering or Applied Science</i>	Dean of The School of Engineering and Applied Science
<i>In Law</i>	Dean of The Graduate School of Public Law
<i>In Accounting, Business Administration, Business and Economic Statistics, Economic Policy, Health Care Administration, International Affairs, Personnel Administration, Public Administration, Public Affairs</i>	Dean of The School of Government, Business, and International Affairs
<i>Men's housing</i>	Dean of Men
<i>Women's housing</i>	Dean of Women
<i>Scholarships and Loans</i>	Director, Student Financial Aid
<i>Student Employment</i>	Student Placement Office, 2114 G Street NW.
<i>Summer Sessions</i>	Dean of the Summer Sessions, Building T
<i>Transcripts of Records</i>	Registrar, Building C
<i>Veterans Education</i>	Director of Veterans Education







*Testing a Slender Column*

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*Summer Semester 1966*

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16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

**JANUARY**

S	M	T	W	T	F	S
..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

**FEBRUARY**

S	M	T	W	T	F	S
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6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	..	..	..	..	..

**MARCH**

S	M	T	W	T	F	S
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6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..

**APRIL**

S	M	T	W	T	F	S
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10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

**MAY**

S	M	T	W	T	F	S
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15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..

**JUNE**

S	M	T	W	T	F	S
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12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	..	..

**JUNE**

S	M	T	W	T	F	S
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12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	..	..

**JULY**

S	M	T	W	T	F	S
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3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

**AUGUST**

S	M	T	W	T	F	S
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7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..

**SEPTEMBER**

S	M	T	W	T	F	S
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11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	..

## THE CALENDAR 1965-66

### FALL SEMESTER

<i>September 9 Thursday</i>	Placement tests for entering students
<i>September 10 Friday</i>	Orientation Assembly for all new students
<i>September 10 Friday</i>	Curriculum Assembly for new full-time students
<i>September 13 Monday</i>	Curriculum Assembly for new part-time students
<i>September 13-15 Monday-Wednesday</i>	Advising for all students
<i>September 16-18 Thursday-Saturday</i>	Registration.—Thursday and Friday from 12:00 to 8:00 p.m.; Saturday from 10:00 a.m. to 1:00 p.m., Tompkins Hall, 725 Twenty-third Street NW.
<i>September 16-18 Thursday-Saturday</i>	Application for February graduation due as part of registration
<i>September 20 Monday</i>	Classes begin
<i>October 1 Friday</i>	Subjects of Master's theses of February candidates due
<i>November 11 Thursday</i>	Veterans Day (holiday)
<i>November 25-27 Thursday-Saturday</i>	Thanksgiving recess
<i>December 1 Wednesday</i>	D.Sc. dissertations of February candidates due
<i>December 4 Saturday</i>	Graduate Record Examination
<i>December 20-January 1 Monday-Saturday</i>	Christmas recess
<i>January 3 Monday</i>	Classes resume
<i>January 3 Monday</i>	Master's theses of February candidates due
<i>January 12 Wednesday</i>	Last day of fall semester classes
<i>January 17-22 Monday-Saturday</i>	Examination period

### SPRING SEMESTER

<i>January 24-26 Monday-Wednesday</i>	Advising for all students
<i>January 24 Monday</i>	Placement tests and waiver examinations
<i>January 27-29 Thursday-Saturday</i>	Registration.—Thursday and Friday from 12:00 to 8:00 p.m.; Saturday from 10:00 a.m. to 1:00 p.m., Tompkins Hall, 725 Twenty-third Street NW.
<i>January 27-29 Thursday-Saturday</i>	Application for June graduation due as part of registration
<i>January 28 Friday</i>	Orientation Assembly for all new students
<i>January 31 Monday</i>	Spring semester classes begin
<i>February 4 Friday</i>	Subjects of Master's theses of June candidates due
<i>February 22 Tuesday</i>	Winter Convocation (holiday)
<i>April 1 Friday</i>	D.Sc. dissertations of June candidates due
<i>April 2 Saturday</i>	Graduate Record Examination
<i>April 4 Monday</i>	Master's theses of June candidates due
<i>April 6-12 Wednesday-Tuesday</i>	Spring recess
<i>April 13 Wednesday</i>	Classes resume
<i>May 18 Wednesday</i>	Last day of spring semester classes
<i>May 21-27 Saturday-Friday</i>	Examination period
<i>May 30 Monday</i>	Memorial Day (holiday)
<i>June 5 Sunday</i>	Baccalaureate Service
<i>June 5 Sunday</i>	Commencement

### SUMMER SESSIONS

Dates will be announced in the Calendar of the 1966 Summer Sessions Catalogue, published in December 1965.

## THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE

*A Profile* The School of Engineering and Applied Science is a professional School in a University comprised of nine degree-granting schools and colleges.

The University is a private nonsectarian institution of higher education in the center of the Nation's Capital.

The School centers attention on the individual and his development toward a successful professional career.

Curricula emphasize theory, analysis, and design, for productive careers in modern science and engineering.

Imagination and creativity are fostered in an atmosphere that encourages the student to realize his full capabilities in accord with his interests.



## THE SCHOOL

EVERY SCHOOL HAS FEATURES THAT DISTINGUISH IT FROM OTHER SCHOOLS and give it a distinctive character. These may be ivy-covered halls, a particular strength of faculty in some area, a location, a student body with certain characteristics. It is necessary that a student know the character of the school before he can make an intelligent decision to undertake his educational development there.

The School of Engineering and Applied Science is a professional school in a University comprised of nine degree-granting schools and colleges. The University is the only private nonsectarian institution of higher education in the Nation's Capital. It is an urban institution in the center of the city. Its students live in the midst of the city's life with all its opportunities for cultural and intellectual development. In a very real sense college life is integrated into the pattern and culture of modern society, providing a most favorable environment for the development and maturing of the student to take his place in the world of today.

The School's purpose is the education of men and women for productive careers in engineering and applied science. We believe we have the function and responsibility to provide an environment and discipline that encourages and fosters development of the whole individual, with an understanding of the society he will serve as well as a high competence in science and technology. The engineer and the applied scientist work for the benefit of humanity; to do so well and responsibly requires that they comprehend the behavior of human beings in addition to the behavior of machines or materials.

The School recognizes the individual student as the single most important element in the educational process. Since individuals are distinctive, there can be no single educational formula or pattern by which the student may be led to professional competence. Therefore

attention is centered on the individual, seeking that particular combination that will encourage and assist him to his utmost effort in his development. The school provides opportunity for many educational experiences, and encourages him to explore many paths toward his goal. He is given much personal freedom, but freedom tempered with responsibility to accept the consequences of his actions and decisions and restrained by the ethics, practices, and rules of the profession he is preparing to enter.

We recognize the essential unity of science and technology, of engineering and applied science. In our curricula strong emphasis is placed on knowledge which is fundamental and has continuing application. Major attention is given to acquisition of competence in theory, analysis, and design, to the end that the individual may possess the means for translating his ideas into reality. Imagination and creativity are encouraged in preference to memorization of technical detail. We aim toward understanding and comprehension as preparation for a professional career.

The demands of a professional career in engineering or applied science are exacting. We believe the student should be exposed to these demands in his preparation, as a part of his learning process. He is encouraged to explore the limits of his capability, and is assisted when he makes mistakes. He learns by doing and by the correction of his errors and mistakes. He is never penalized for trying but he must try.

The atmosphere of the School is one of serious-minded effort toward mature development. Students work closely with faculty members and often develop lasting friendships. The student body is close-knit and has a high sense of responsibility and loyalty to its individual members and to the School.

Approximately half of the 1,400 students come from throughout the nation and foreign countries. A substantial number of students are employed. A large part of the student body has a primary interest in research and development; the remainder look toward careers in design or in administration of scientific and engineering activities.

The objective toward which the School strives is to stimulate and assist the student to develop to the limit of his capability; to acquire understanding of the principles and practices of engineering and applied science; to develop skill in the application of his knowledge to serve the needs of mankind; and to have a sense of responsibility to society and his profession.

*History* The School of Engineering and Applied Science was organized October 1, 1884, as the Corcoran Scientific School of Columbian University and was situated in the University Building then at 15th and H Streets, NW. The school was named in honor of William W. Corcoran, Trustee and President of the Corporation from 1869 to 1888. Day and evening courses were offered in Literature, Science, and Technology and led to the degrees of Bachelor of Science, Civil Engineer, Mechanical Engineer, and Mining Engineer. The school was among the first to accept women for degree candidacy in engineering.

In 1903 the Corcoran Scientific School, the School of Graduate Studies, and the Columbian College were merged into a single Department of Arts and Sciences. Engineering degrees were made graduate.

Administrative changes led to The Washington College of Engineer-

ing being initiated in 1905 as one of the several semi-independent undergraduate colleges of the University, each with its own Board of Trustees. The College provided instruction leading to undergraduate degrees in engineering and architecture.

In 1909 the name of the College was changed to the College of Engineering and Mechanic Arts, and the curricula were revised to give the student a thorough understanding of the theory underlying engineering practice. Emphasis was placed on the development of a knowledge of scientific principles upon which the student could build and by which he might solve new problems as they are met in practice.

The name of the School was changed again in 1914 to the College of Engineering and later to the School of Engineering. Architecture was dropped from the curriculum and degrees were limited to the field of engineering. However, the primary emphasis upon principles rather than technology which had characterized the School since 1903 was continued and has remained to this day as one of the important distinguishing features of the School.

In 1962 the name of the School became the School of Engineering and Applied Science.

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

Those curricula of the School of Engineering and Applied Science which are within the purview of the Engineers' Council for Professional Development are accredited by that agency.

#### *Academic Status*





## UNDERGRADUATE STUDY

THE UNDERGRADUATE PROGRAM is intended to provide a solid foundation in the basic principles, concepts, and techniques underlying technology and applied science, on which the individual may build technical competence in a variety of areas as his professional career develops. It is in preparation for a career in engineering or applied science, as it exists today and as it may develop in the future.

Undergraduate study is the formal beginning of a life-long continuing program of education. The graduate, when he receives his Bachelor's degree, is prepared for productive work in his chosen field; he is also prepared for further development and progress, both formal and informal.

The School provides an environment that encourages and fosters the attitudes and disciplines essential to professional growth. Upon completion of the undergraduate program the student is prepared for immediate entry into professional activity or continuing study at the graduate level.

Admission indicates at least minimum preparation and the probable capacity to meet the unusual educational demands of this School. However, the nature of the approach requires real effort, intellectual discipline, and maturity. Because the School can predict neither the student's response to the demands made on him nor the program he should follow for his most effective development, it has designed an undergraduate program that offers a variety of experiences through which the student may find his own best path to maturity and growth in educational development.

In the fields of engineering and applied science there is no substitute for demonstrated ability and competence by the correct solution of problems. Achievement in a particular course of study, while important, is less pertinent than the ability to analyze and interpret all the aspects of a problem, formulate solutions, and evaluate the solutions in

the light of all available information. The undergraduate program provides a periodic evaluation and appraisal of the student's ability.

Engineers and applied scientists are involved with the conquest of nature for the benefit of mankind, as well as with the development and accumulation of knowledge. They live and do their work in the real-life environment of the moment, and what they do for humanity is dictated in large part by the needs and desires of man for security and comfort. Thus they must have a strong sense of morality, a high concern for the progressive well-being of mankind, and an intimate knowledge of the realities of life. Therefore the School insists that the undergraduate include in his study courses in the humanities, to the extent necessary to develop a reasonable understanding and appreciation of these areas of knowledge. Cultivation in the intricacies of society and comprehension of human values are sought for the student, in complement to his scientific and technical literacy.

The School is a place for learning; for experiencing adventures of the mind and of the hands; for the formulation, exchange, and exploration of ideas. During his undergraduate years the student is led to strengthen his skills in analysis and his talent for creative activity, through liberal use of project-type laboratory work. Independent thought and original ideas receive higher evaluation, in the appraisal of student achievements, than the rote recital of information.

### THE CURRICULA

Undergraduate curricula of the School have a three-level form — the Introductory Level, the Intermediate Level, and the Advanced Level. Progression from one level to the next requires a certain number of semester hours of formal study and a satisfactory demonstration, through the medium of a comprehensive evaluation, of ability to use knowledge gained through study and intellectual powers developed.

In general, study at the Introductory and Intermediate levels serves the purpose of acquisition and development of the broad base of information, skills, and attitudes on which the concentration of study at the Advanced Level will be founded. There is no formal specification of courses to be undertaken at the Introductory or Intermediate level; the concentration of study at the Advanced Level is specified and is related to a particular degree designation.

All undergraduate curricula lead to the degree of Bachelor of Science, with parenthetic designation of a particular area of concentration. For example: Bachelor of Science (Electronics); Bachelor of Science (Theoretical and Applied Mechanics); Bachelor of Science (Mechanical Engineering).

A minimum total of 140 semester hours is required to qualify for the degree.

Degrees are offered in the following areas:

Civil Engineering	Engineering Science
Communications	Machine Computers
Control Systems	Measurement Science
Electrical Engineering	Mechanical Engineering
Electronics	Structures
Energy Conversion	Theoretical and Applied Mechanics

## INTRODUCTORY LEVEL

The student entering the School with high school preparation starts his professional studies at the Introductory Level. His choice of courses is governed by his needs for preparation in the areas of knowledge included in the intermediate comprehensive evaluation and by his interests. There is no rigid specification of courses. The difference in semester hours between the number necessary for preparation and the approximate number required (70) is available to the student for elective study in any subjects he chooses.

Thus the student can choose the most effective (for him) of several paths to the Intermediate Level, can make full use of advanced placement opportunities, proceed at his own best pace, and have experiences to assist him in formulating his ultimate educational objective.

The student is assisted in this task by his faculty adviser, who must approve his program each semester, prior to registration. For the guidance of the student and his faculty adviser, every beginning student completes the School's placement examinations in English, Reading, Algebra, and Trigonometry. The student is required to undertake remedial work in any of these areas in which he is deficient as determined by the standards of the School, prior to enrollment in courses in the area of deficiency.

The following curriculum illustrates one of several feasible combinations of courses that might be selected.

### First Semester

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Ap S 4: Logic and Method in Analysis, 3  
Ap S 5: Finite Mathematics and Statistics in Science I, 3  
Math 27: Calculus I and II, 6  
Elective: \* 3

### Second Semester

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Ap S 3: Graphical Communication, 3  
Ap S 6: Finite Mathematics and Statistics in Science II, 3  
Math 28: Calculus III and IV, 6  
Elective: \* 3 to 6

### Third Semester

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Ap S 10: General Field Theory, 3  
Ap S 59: Introductory Analytical Mechanics I, 5  
Chem 13: General Chemistry, 4  
Math 111: Mathematics for Engineers and Physicists I, 3  
Elective: 3

### Fourth Semester

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Ap S 11: General Wave Theory, 3  
Ap S 60: Introductory Analytical Mechanics II, 5  
Chem 14: General Chemistry, 4  
Math 112: Mathematics for Engineers and Physicists II, 3  
Elective: 3 to 6  
Intermediate Comprehensive Evaluation, 0

\* Students who did not study Physics in high school should take Physics 1-2.



The work of the introductory level may be undertaken in this School or any other accredited institution of college level, and may consist of courses in any subjects acceptable for degree credit in the institution in which they are completed; except courses in Physical Education, Secretarial Studies, or remedial subjects. The courses taken should prepare the student for the intermediate comprehensive evaluation.

Introductory Level study is terminated by the intermediate comprehensive evaluation, the completion of which is required for entry into further study at the Intermediate Level. The evaluation includes a written part which is similar in nature and content to the Fundamentals Section of the examinations for professional registration, an oral interview with a group of three faculty members, and a review of formal course achievement.

The areas included in the evaluation serve as a guide to students in arranging their programs of study. The content and level of the evaluation are indicated by the context of the entire evaluation rather than by the statements under any one item. The evaluation appraises the student's ability to integrate and use his knowledge as well as the extent and quality of his information.

The areas included in the evaluation and suggested courses which the student may choose to undertake as preparation are:

ANALYSIS — logic and method in analysis (Ap S 4, Ap S 58, Phil 121-22)

COMMUNICATION — correct use of English, spelling, composition, sketching, descriptive geometry, use of graphic aids, interpretation of drawings (Engl 1-2, Ap S 3)

CHEMISTRY — introductory general chemistry (Chem 13-14)

MATHEMATICS — including analytic geometry, differential and integral calculus, ordinary and partial differential equations, finite series, complex variables, vector analysis, and finite mathematics (Ap S 5-6, Math 27, 28, 111, 112)

PHYSICS — introductory general physics including molecular structure of matter and atomic physics (Physics 1-2, 31-32, 51-52)

STATISTICS — principles and methods of statistics (Ap S 5-6, AP S 107, Stat 91)

HUMANITIES AND SOCIAL SCIENCES — (the evaluation will require a critical essay in the area.)

The faculty evaluation is based on the written material, the oral interview, and the student's achievement record in course work. Students whose course achievement is high may be excused from the written part of the evaluation. *No grade is assigned on the evaluation.* The evaluating faculty report their appraisal as "Satisfactory" or "Deficient." In the latter case they recommend the remedial actions to be taken and may require reevaluation at a later time or permit the student to enter the Intermediate Level.

### *Intermediate Comprehensive Evaluation*

## **INTERMEDIATE LEVEL**

A student enters the Intermediate Level by presenting approximately 70 hours of course work in any subjects and an intermediate compre-

hensive evaluation. He is admitted to Intermediate Level study by favorable decision of the faculty group which appraises the student's qualifications to proceed with study, as shown by both his course record and the evaluation. A minimum of 60 hours of course work must be presented. The comprehensive evaluation must be taken in the School of Engineering and Applied Science.

The curriculum in the Intermediate Level is determined, as in the Introductory Level, by the student's needs in preparation for the advanced comprehensive evaluation and by his interests. There is no specification of required courses.

At this level it is desirable for the student to anticipate, in his selections of courses, the area of concentration he intends to enter at the Advanced Level. While he continues to build foundation knowledge at this level, there is opportunity to expand the foundation in some areas in preparation for later concentration. The student is advised to plan his program at this level carefully, with the advice and assistance of his faculty adviser. At this level the student bears the entire responsibility for his study program; faculty approval is not required, but the professional advice and counsel of the student's adviser are available on request.

The following curriculum illustrates one of a number of combinations of courses that might be selected as a study program at the Intermediate Level (fifth and sixth semesters). The areas included in the advanced comprehensive evaluation serve as a guide to the student in planning his program at the Intermediate Level.

#### Fifth Semester

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Ap S 29:	General Network Theory I, 3
Ap S 63:	Fluid Mechanics I, 3
Ap S 85:	Thermodynamics, 5
Ap S 101:	Materials Science I, 4
Ap S 105:	Fundamentals of Measurement Science I, 4

#### Sixth Semester

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Ap S 30:	General Network Theory II, 3
Ap S 64:	Fluid Mechanics II, 3
Ap S 102:	Materials Science II, 4
Ap S 106:	Fundamentals of Measurement Science II, 4
Ap S 110:	Management Analysis, 3
Elective	3

Advanced Comprehensive Evaluation, 0

#### *Advanced Comprehensive Evaluation*

Intermediate Level study is terminated by the advanced comprehensive evaluation, the completion of which is required for entry into further study at the Advanced Level. The evaluation includes a written part which is similar to portions of the examinations for professional registration, an oral interview with three faculty members, and review of the student's achievement in course work. The content and level of the evaluation material are indicated by the context of the entire evaluation rather than by the statements under any one item. The evaluation appraises the qualification of the student to proceed productively in a chosen area of concentration, and will include some material related specifically to particular areas of concentration.



The areas included in the evaluation and suggested courses the student may choose to undertake as preparation are:

**ANALYTICAL MECHANICS** — mechanics of rigid and deformable bodies, including soils and fluids (Ap S 59–60, 62, 63–64, 71–72)

**FIELD AND WAVE THEORY** — basic theory and analysis of fields (electric, magnetic, potential, vector, etc.) and of wave motion (Ap S 10, 11, 12, 63–64)

**HUMANITIES AND SOCIAL SCIENCES** — (The evaluation will require a substantial essay in a specific area.)

**MANAGEMENT SCIENCE** — basic concepts and methods of management science, elementary operations research and analysis (Ap S 110, 111)

**MATERIALS** — structure of materials, behavior as related to structure, principles of control of material properties, quantum physics aspects (Ap S 101–2)

**METROLOGY** — standards, measurement principles, error, design of experiments, standard devices, and procedures in measurement (Ap S 105–6, 107)

**NETWORK THEORY** — basic theory and analysis of networks and elements of network synthesis (Ap S 29–30, 32, 55)

**THERMODYNAMICS AND ENERGY CONVERSION** — fundamental concepts and theory; electrical, mechanical, thermal, and chemical energy conversion systems (Ap S 85, 86, 130)

The faculty evaluation is based on the written material, the oral interview, and the student's achievement in course work. Students whose course achievement is high may be excused from the written material. *No grade is assigned on the evaluation.* The faculty appraisal is reported as "Satisfactory" or "Deficient." In the latter case they recommend the remedial actions to be taken and either may require reevaluation or permit the student to enter the Advanced Level.

### ADVANCED LEVEL

A student enters the Advanced Level by presenting not less than 90 hours of course work in any subjects and an advanced comprehensive evaluation. He is admitted to Advanced Level study by favorable decision of the faculty group which appraises the student's qualifications to proceed with study in the area of concentration, as shown by both his course record and the evaluation.

Advanced Level study provides for concentration in a specific area of engineering or applied science. The curriculum (study program) is defined in detail and determines the parenthetical degree designation. Although the required courses are specified, reasonable variation from the specification is possible to accommodate particular interests and needs of the student, especially when these relate to newly developed or frontier areas or when the student has completed any of the required courses during his earlier preparation.

In contrast to study at the lower levels, study at the Advanced Level has a strong component of design and application, to give the student experience in the creative work that is the distinguishing characteristic of engineering and applied science.



All curricula at the Advanced Level include specified course work, and electives to complete the total of 140 semester hours required to qualify for degree consideration. The specified curricula at the Advanced Level follow.

### *Civil Engineering*

Civil engineering is the broad branch of engineering most closely related to daily human activities. Study in this area prepares for careers in the design of buildings, bridges, aircraft and missile frames, tunnels, and dams; the planning of cities; and for research on new types of structures, new materials, and new methods of construction.

The concentration of study outlined below provides the essentials for beginning a career upon graduation, for registration as a professional civil engineer as required by law, and for continuing study at the graduate level.

#### Required Courses

Ap S 62:	Soil Mechanics, 3
Ap S 70:	Earth Science, 3
Ap S 121-22:	Structural Theory I-II, 8
Engr 1:	Engineering Planning and Economics, 3
Engr 2:	Regional and Urban Planning, 3
Engr 10:	Hydraulic Engineering, 3
Engr 11-12:	Structural Design I-II, 10
Engr 21:	Application of Computers to Engineering Problems, 3

### *Communications*

Study in this area prepares for careers in telephone, radio, and wire communications; space and satellite communications; rocket control and guidance; high frequency communications such as microwaves; and other forms of communication using vacuum tubes, transistors, light amplifiers, and similar devices. Communication theory and system design are emphasized. The graduate may choose to enter research and development in the design of new methods of communication or the design, construction, and operation of communications systems.

The study outlined below provides the essentials for beginning a career upon graduation and the base for further study at the graduate level.

#### Required Courses

Ap S 32:	Network Analysis, 3
Ap S 50:	Information Theory, 3
Ap S 55:	Control Theory, 3
Ap S 58:	Analysis Methods, 3
Engr 19-20:	Engineering Electronics I-II, 6
Engr 52:	Introductory Transducers and Instrumentation, 3
Engr 53:	Advanced Transducers and Instrumentation, 3
Engr 101-2:	Communications Laboratory I-II, 6
Engr 107-8:	Electronics Laboratory I-II, 6

### *Control Systems*

Control systems is a branch of technology which provides the technical means for automation and automatic control of devices, machinery, manufacturing processes, and a variety of tasks and operations. The study outlined is preparation for such activities as: design and construction of systems for space missile guidance and control, the control

of nuclear reactors and atomic energy systems; automatic control of radar search devices; design of automatic machinery of all types; and the design and operation of electronic mechanisms for automatic control. The use of machine computers in control systems is emphasized.

The graduate is prepared to undertake analysis and design of control systems, to carry on research on automatic control, and to continue further study at the graduate level.

#### Required Courses

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Ap S 32:	Network Analysis, 3
Ap S 50:	Information Theory, 3
Ap S 55:	Control Theory, 3
Ap S 65-66:	System Dynamics I-II, 6
Ap S 175:	Digital Circuitry and Systems, 3
Engr 21:	Application of Computers to Engineering Problems, 3
Engr 52:	Introductory Transducers and Instrumentation, 3
Engr 53:	Advanced Transducers and Instrumentation, 3
Engr 103-4:	Control Laboratory I-II, 6
Engr 122:	Digital Techniques, 3

Electrical engineering is one of the traditional broad branches of engineering, and is primarily concerned with the uses of electrical energy in various forms. The study outlined is preparation for such activities as: analysis and design of electric power generating plants, power transmission systems, and electrical appliances; the design and application of motors, generators, and transformers; the design of electrical instruments and their use in measurement; and the design of the electrical equipment of buildings, factories, ships, aircraft, missile and rocket test and launching sites.

The study outlined provides the essentials for beginning the practice of electrical engineering (including registration as a professional electrical engineer as required by law), for continuing graduate study in any of the many specialties of electrical engineering, and for undertaking research in electrical engineering. The concentration provides a broad insight into the most common areas of electrical engineering, preparation for immediate careers in this area, and a sound base for graduate study.

#### *Electrical Engineering*

#### Required Courses

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Ap S 32:	Network Analysis, 3
Ap S 130:	Electrical Energy Conversion, 3
Engr 19-20:	Engineering Electronics I-II, 6
Engr 21:	Application of Computers to Engineering Problems, 3
Engr 49-50:	Precise Electrical Measurements I-II, 6
Engr 105-6:	Electrical Engineering Laboratory I-II, 6
Engr 109-10:	Energy Conversion Laboratory I-II, 6

Electronics involves the use and control of very small amounts of electrical energy to manipulate and operate devices designed to extend and complement human nerves and brains. The study outlined is preparation for such activities as: design and use of electronic instruments in radio, telephone, facsimile, and television systems, in devices

#### *Electronics*



to control industrial machinery, and in computers; the design and application of transistor and solid-state circuits; the design of radar and navigation devices and systems; and the application of electronics in other branches of science and in medicine.

The graduate is prepared to undertake design, to engage in research and development of new applications of electronics, and to continue in graduate study.

#### Required Courses

Ap S 32:	Network Analysis, 3
Ap S 55:	Control Theory, 3
Engr 19-20:	Engineering Electronics I-II, 6
Engr 21:	Application of Computers to Engineering Problems, 3
Engr 49-50:	Precise Electrical Measurements I-II, 6
Engr 52:	Introductory Transducers and Instrumentation, 3
Engr 53:	Advanced Transducers and Instrumentation, 3
Engr 107-8:	Electronics Laboratory I-II, 6

#### *Energy Conversion*

Energy conversion is concerned with the development and application of energy sources. The study outlined is preparation for such activities as: research on new energy sources (such as: fuel cells, biological processes, and solar batteries); development and design of energy sources employing thermionics, thermoelectricity, direct chemical conversion, photovoltaic processes, and biological processes; design and application of fuel cells, thermionic converters, electrical and electro-mechanical machines.

Energy conversion is a new and rapidly growing area, offering unusual opportunity. The graduate will find most opportunity in research and development, and in application of new energy sources. The study program provides preparation for such careers and for continuing graduate study.

#### Required Courses

Ap S 85:	Thermodynamics, 5
Ap S 86:	Energy Conversion, 3
Ap S 87:	Heat Transfer Theory, 3
Ap S 130:	Electrical Energy Conversion, 3
Engr 31-32:	Thermal Power I-II, 6
Engr 35:	Fluid Machinery, 3
Engr 109-10:	Energy Conversion Laboratory I-II, 6
Engr 111-12:	Mechanical Engineering Laboratory I-II, 6

#### *Engineering Science*

Engineering science is a broad area of fundamental knowledge of engineering principles, concepts, and techniques underlying all of technology. The study outlined prepares for careers in research and development of new devices and techniques for use in scientific exploration of the oceans, space, the atmosphere, and the earth; the design and construction of devices for use in medical, biological, physical, and chemical research; the design and use of new materials, structures, and machines for control of nature; and research to improve engineering devices and methods.

The graduate of this program is most likely to engage in research and development or in graduate study through the doctoral level.



#### Required Courses

- Ap S 32: Network Analysis, 3
- Ap S 55: Control Theory, 3
- Ap S 58: Analysis Methods, 3
- Ap S 63-64: Fluid Mechanics I-II, 6
- Ap S 65-66: System Dynamics I-II, 6
- Ap S 87: Heat Transfer Theory, 3
- Engr 19-20: Engineering Electronics I-II, 6
- Engr 21: Application of Computers to Engineering Problems, 3

Machine computers are finding wide application in many scientific and engineering applications as well as in business and industry. Their greatest development and application are yet to come. The study outlined is preparation for such activities as mathematical (logic) and electronic design of computers; programming; coding; electronic design of circuits employing transistors and other solid-state devices; design of computer logic; the use of computers in medicine; research in computer design and applications; development of computer solutions to management, business, and industrial problems; and the design of computers for use in control systems.

The graduate will find many opportunities in industry, business, research, and teaching. The study program provides preparation for these careers and a broad base for further specialization in graduate study.

#### *Machine Computers*

#### Required Courses

- Ap S 32: Network Analysis, 3
- Ap S 50: Information Theory, 3
- Ap S 175: Digital Circuitry and Systems, 3
- Engr 19-20: Engineering Electronics I-II, 6
- Engr 21: Application of Computers to Engineering Problems, 3
- Engr 23-24: Computer Laboratory I-II, 6
- Engr 107-8: Electronics Laboratory I-II, 6
- Engr 122: Digital Techniques, 3

Measurement science concerns the design, construction, and use of instruments in measurement, and the design of experiments. The study outline below is preparation for such activities as testing of rockets, missiles, and space vehicles; measurements of the characteristics and properties of materials; determination of standards of measurement in light, heat, optics, electricity, etc.; research in measurement methods and techniques in various fields of science and in medicine; design and construction of measuring instruments; design and execution of experiments and tests of various kinds; and control of quality of manufactured products.

The graduate will find many opportunities in space research, industry, manufacturing, and research. Opportunities are especially good in the design and application of instruments.

#### *Measurement Science*

#### Required Courses

- Ap S 55: Control Theory, 3
- Engr 19-20: Engineering Electronics I-II, 6
- Engr 49-50: Precise Electrical Measurements I-II, 6

- Engr 52: Introductory Transducers and Instrumentation, 3
- Engr 53: Advanced Transducers and Instrumentation, 3
- Engr 54: Precise Mechanical Measurements, 4
- Engr 55: Precise Heat Measurements, 4
- Engr 56: Pressure Measurements, 3

### *Mechanical Engineering*

Mechanical engineering is the broad branch of engineering concerning machinery, equipment, and other power devices; particularly in manufacturing and industry. The study outlined below is preparation for such activities as design of power generating equipment and plants (viz: jet engines, gas turbines, steam boilers, etc.); design and construction of aircraft, missiles, automobiles, and ships; manufacture of machines and goods; design of mechanical equipment (heating, air-conditioning, automatic machinery, nuclear reactor controls); and research to develop new kinds of power machinery.

The graduate will find many opportunities in manufacturing, in design, and in research. The preparation is adequate for beginning the practice of mechanical engineering, and provides the essential knowledge needed in registration as required by law for practice as a professional mechanical engineer.

Careers in research in mechanical engineering should include additional study at the graduate level.

#### Required Courses

- Ap S 55: Control Theory, 3
- Ap S 65-66: System Dynamics I-II, 6
- Ap S 85: Thermodynamics, 5
- Ap S 87: Heat Transfer Theory, 3
- Engr 21: Application of Computers to Engineering Problems, 3
- Engr 31-32: Thermal Power I-II, 6
- Engr 35: Fluid Machinery, 3
- Engr 111-12: Mechanical Engineering Laboratory I-II, 6

### *Structures*

The structures expert is concerned with the analysis and design of structures to satisfy functional requirements and withstand the forces acting. The study outlined is preparation for such activities as design of skyscrapers, tunnels, dams, missile silos and launching sites, powerhouses, bridges, and aircraft frames; the development of new types of structures (such as structures for outer space, missiles, orbiting satellites); the use of new materials in structures; analysis of structure behavior in earthquakes; and research on structural design.

The graduate will engage chiefly in analysis and design or in research. The study program provides the essential knowledge for registration required by law to practice as a professional structural engineer, for engaging in research, and for further specialization in graduate study.

#### Required Courses

- Ap S 62: Soil Mechanics, 3
- Ap S 70: Earth Science, 3
- Ap S 71-72: Mechanics of Deformable Solids I-II, 6
- Ap S 121-22: Structural Theory I-II, 8
- Engr 1: Engineering Planning and Economics, 3



- Engr 11-12: Structural Design I-II, 10  
 Engr 15: Structural Dynamics, 3  
 Engr 21: Application of Computers to Engineering Problems, 3

Theoretical and applied mechanics is concerned with the behavior of matter when subjected to forces. The study outlined is preparation for such activities as: prediction and measurement of blast effects of bombs on buildings; analysis of behavior of vehicles re-entering the atmosphere; development of theory defining behavior of materials; mathematical analysis; study of behavior of fluids; and applications of mechanics to celestial and space bodies.

The graduate will find most opportunity in research, particularly in regard to machines and structures; and should plan further study at the graduate level.

### *Theoretical and Applied Mechanics*

#### Required Courses

- Ap S 62: Soil Mechanics, 3  
 Ap S 63-64: Fluid Mechanics I-II, 6  
 Ap S 65-66: System Dynamics I-II, 6  
 Ap S 71-72: Mechanics of Deformable Solids I-II, 6  
 Ap S 80: Introductory Astronomy, 3  
 Ap S 87: Heat Transfer Theory, 3  
 Ap S 198: Undergraduate Research, 3  
 Engr 21: Application of Computers to Engineering Problems, 3

### ADMISSION TO UNDERGRADUATE STUDY

It is the purpose of the School to admit for study those persons who can benefit themselves and society by disciplined intellectual effort in its environment. The School has a responsibility to admit those whose prospect for successful and rewarding achievement justifies the opportunity to study and whose objectives can be satisfied with the resources the School offers. The School admits as many students meeting these criteria as its resources permit.

Admission requirements are stated in terms of the minimum qualifications establishing a favorable prospect for successful completion of the curricula. In fairness to those presenting a lower level of qualification the School may deny admission when, in the judgment of the School, the prospect for success of the student is questionable.

Admission to the School of Engineering and Applied Science is the first selective step of a long series of qualifying tests the student will take in progression toward professional competence and status, and indicates the School's belief that the applicant has at least the minimum preparation and ability to complete the curriculum successfully.

### *The Purpose of Admission*

The applicant for undergraduate admission must be of good character and must have an academic background appropriate for the program of studies contemplated.

Consideration for admission is based upon the combined evidence of the following factors:

### *Criteria for Admission*

1. An acceptable certificate of graduation from an accredited high



school showing at least fifteen units \*;

2. The principal's statement that the applicant is prepared to undertake college work;

3. Scores on the following College Entrance Examination Board tests: the Scholastic Aptitude Test, the English Composition Achievement Test, and a Level I (Standard) or Level II (Intensive) Mathematics Test — Level I preferred.

4. Evidence from the high school grades that the applicant can achieve satisfactorily in formal study;

5. Evidence in reference letters, requested by the applicant, as to the applicant's motivation toward engineering and applied science, and his seriousness of purpose.

The qualifications of applicants who, because of unusual circumstances, do not meet the above requirements will be considered by the School, which may prescribe admission tests.

Nine and one-half of the fifteen units required for entrance must be distributed as follows: three in English, two in algebra, one in plane geometry, one-half in plane trigonometry, one in physics or chemistry, and two in one foreign language or history. General science may not be counted in satisfaction of the science requirement but may be counted as an elective unit.

It is recommended that *both* physics and chemistry be studied in high school. Study of these sciences contributes to the student's general education, aids in his choice of a career, and affords a qualitative measure of his ability and potential for study of engineering or science. The study of solid geometry is recommended, in order that the student may have a firm foundation for his collegiate studies in mathematics.

*Quantitative Deficiency.*—A graduate of an approved high school who does not offer for admission the particular subjects required, but who does present not less than fifteen acceptable units, may be admitted to pursue a prescribed program of studies including courses to make up for deficiencies if the deficiency in distribution does not exceed two units.

**Procedure** An applicant for admission obtains from the Office of the Director of Admissions of the University an application blank which he must fill out completely and return with the \$15 application fee. A recent photograph, with signature, of the applicant must be attached to the blank.

*To insure consideration the application, together with all required credentials, should be received by July 1 for the fall semester, January 1 for the spring semester, May 1 for the first summer session, or June 1 for the second summer session.*

No application will be considered after September 1 for the fall semester, January 10 for the spring semester, June 1 for the first summer session, or July 1 for the second summer session.

An applicant from a secondary school sends the high school record form provided by the University to his high school principal with the request that the principal fill out the form and mail it directly to the Office of the Director of Admissions.

\* A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods of prepared classroom work.

The prospective student from a secondary school requests the College Entrance Examination Board to send to the Office of the Director of Admissions the scores of all College Entrance Examination Board Scholastic Aptitude tests and Achievement tests taken. Arrangement for tests is the responsibility of the applicant and should be made with the Educational Testing Service, 20 Nassau Street, Princeton, N. J. 08540, or 1947 Center Street, Berkeley, Calif. 94704, not less than one month before the date of the test. On the application for the test, the student should specify that the scores be sent to the Director of Admissions, The George Washington University, Washington, D. C. 20006.

A prospective student who has previously attended one or more institutions of higher learning must request each registrar to mail directly to the Office of the Director of Admissions a transcript of his record, even though credits were not earned.

A student previously registered in the University who was not registered on campus during the immediately preceding semester must apply for readmission in the Office of Admissions (time stated above) in advance of registration. If the student applies as a degree candidate and was previously registered as a nondegree student, or if he has attended one or more higher institutions during his absence from the University, he must have complete, official transcripts sent to the Office of the Director of Admissions from each institution attended before his application will be considered. Applications for readmission are considered on the basis of regulations currently effective.

### *Readmission*

#### CREDIT FOR ADVANCED PLACEMENT EXAMINATIONS

Advanced standing may be granted for study at the collegiate level in advanced courses in an approved secondary school, if substantiated by satisfactory performance in the Advanced College Placement Examination. Arrangement for the examination is the responsibility of the applicant and should be made with the College Board Advanced Placement Examinations, Educational Testing Service, 20 Nassau Street, Princeton, N. J. 08540, or 1947 Center Street, Berkeley, Calif. 94704.

The applicant must request the examining service to submit the test papers and scores to the Office of Admissions. Consideration is given to both the quality of performance on the examination and the quality and content of the course of study completed by the applicant. Credit may be withheld pending satisfactory completion of higher-level courses in the same field.

Total credit that may be so granted is ordinarily limited to 15 semester hours, not more than 8 semester hours of which may be in any one examination area. In exceptional cases these limits may be exceeded, but in no case will the credit granted exceed 30 semester hours.

#### CREDIT FROM HIGHER INSTITUTIONS

Advanced standing may be granted for work successfully completed at accredited institutions of higher learning. Credit will be granted for transferred work only when it meets the requirements for the degree sought at this University, and subject to the general University regula-

### *Advanced Standing*



tions concerning satisfactory subsequent work. Work of low pass grade (*D* or the equivalent) will not be considered for transfer.

#### SERVICE SCHOOL CREDIT

A limited amount of credit earned in service schools since 1941 may be considered for assignment to qualified degree candidates in the School of Engineering and Applied Science. Veterans should submit to the Director of Admissions photostatic copies of their service school records, indicating courses successfully completed with sufficient identification of the course to locate it in the Guide of Evaluation of Educational Experience in the Armed Forces.

#### ADVISORY SYSTEM

The School of Engineering and Applied Science encourages a close Faculty-student relationship. Every entering undergraduate student is assigned a permanent Faculty adviser to assist him to orient himself in the professional discipline. Faculty advisers counsel students on their programs of study, the achievement and maintenance of satisfactory scholastic performance, professional development, and extracurricular activity as part of the educational process. The adviser represents the student in all cases requiring Faculty action.

Students in the Introductory Level must obtain their advisers' approval of programs of study prior to registration. Until a student has completed the work of the Introductory Level he must follow the recommendations of his adviser in all academic matters. However, an adviser may not deny a student entry into any course or activity to which he is entitled under the regulations of the School.

Students in the Intermediate and Advanced Levels are encouraged to consult their advisers. The Dean acts as temporary adviser to entering or transfer students pending assignment of their permanent advisers.

All students are encouraged to discuss college problems with their advisers or instructors at any time; and parents or guardians are invited to consult with the Dean and advisers, concerning any student problems.

Faculty advisers discharge their counseling duties in accordance with the high principles of their professional responsibility; however, the final responsibility for a student's action lies wholly with the student.



## GRADUATE STUDY

GRADUATE STUDY IS RAPIDLY BECOMING A NECESSITY for the engineer or applied scientist. Tomorrow's leaders are developing today the increased knowledge and capability demanded by the accelerating pace of advance in engineering, science, and administration. Industry eagerly seeks those with advanced knowledge, analytical skill, and ability.

The School of Engineering and Applied Science offers graduate study leading to the degrees of Master of Science, Master of Engineering Administration, and Doctor of Science.

In the graduate programs as in undergraduate study, the educational philosophy of the School is to increase the knowledge and understanding of the individual student by concentration on principles and their application rather than by encyclopedic coverage of techniques and specialized detail. Each program is individually planned according to the student's preparation and needs. Included are courses in his major area and related fields.

Graduate study may be undertaken in any field of engineering or applied science in which a scientific discipline exists and in which the School has adequate facilities and resources. The student also may select courses in other departments of instruction of the University in order to serve specific needs or objectives.

### The Master's Programs

#### THE DEGREE OF MASTER OF SCIENCE

The objective of this discipline is a substantial comprehension of principles and methods for their use, as applied in modern technology.

Increased understanding and its use in solving engineering problems are sought, rather than a breadth of familiarity with applications and techniques.

The student's program may provide for broad coverage in a variety of fields or may be designed to give some degree of specialization in a particular area, as determined by conference at the time of admission to candidacy. The specialization available is indicated by the courses of instruction (see pages 64-67, 69-73).

The level of the courses ordinarily requires as prerequisite the satisfactory completion of at least one undergraduate course in mathematics beyond the first course in ordinary differential equations and at least one in the area of the graduate course to be undertaken.

### THE DEGREE OF MASTER OF ENGINEERING ADMINISTRATION

The objective of this discipline is to develop an understanding of the principles and a competence in the practices of administration as applied to engineering and scientific activities. Knowledge and understanding are sought rather than mere familiarity with techniques.

A study program is prescribed for each candidate; programs are integrated sequences of courses. This program is for engineers and scientists who have or anticipate responsibility for administration of engineering or scientific activities. Analysis, case study, and quantitative approaches are emphasized in addition to the technical theories of administration.

In addition to the requirements for admission to graduate study stated below, the applicant must have an adequate knowledge of the principles of human relations, the fundamentals of accounting, and the fundamentals of statistics. This requirement can be met by the successful completion of the following undergraduate courses or an approved equivalent: Psychology 145 *Principles of Human Relations*, Accounting 115 *Survey of Accounting*, and Statistics 107 *Statistics for Engineers*. The student should have a working command of calculus.

#### *Admission to Graduate Study*

Admission to graduate study toward a Master's degree requires a Bachelor's degree from a recognized institution and evidence of capacity for productive work in the field selected.

Applicants who have significant deficiencies in their preparation may qualify for admission to graduate study by taking prescribed undergraduate courses. In some cases such study may be carried on in addition to a limited graduate program. In no case may the undergraduate courses fulfill any part of the requirements for the graduate degree. Admission to graduate study does not admit the student to degree candidacy.

#### *Admission to Master's Candidacy*

Application for admission to candidacy for a Master's degree must be made in writing to the Dean. To be accepted the applicant must have (1) been accepted for graduate study, (2) satisfactorily completed 9 semester hours of graduate courses approved as part of his study program, (3) give evidence of satisfactory personal and intellectual qualifications, and (4) present a proposed program of study in preparation for the comprehensive examination. In exceptional cases



the requirement of 9 semester hours of graduate courses may be reduced.

Graduate courses completed before admission to graduate study toward a Master's degree in the School of Engineering and Applied Science are not transferable for degree credit. They may, however, be considered in planning individual programs. Course work to satisfy degree requirements in another school or college of the University may not be applied toward a degree in the School of Engineering and Applied Science. Courses completed while a student in the Division of University students are not accepted for credit in the Master's degree programs.

### *Advanced Standing*

The basic requirement for the degree is the satisfactory completion of the comprehensive examination.

### *Requirements for the Degree*

#### RESIDENCE

The candidate must complete a minimum of one year of full-time study, or the equivalent in part-time study, in the School. A full-time student must complete all requirements for the degree within three years; a part-time student, within five years.

#### SCHOLARSHIP

A minimum grade of "Satisfactory" is required in all courses. A student who makes one grade of "Unsatisfactory" may repeat the course once. A student who receives two or more grades of "Unsatisfactory" will not be permitted to enroll further in the School until he demonstrates by examination, or as may be directed, that his deficiencies in course work have been removed. A minimum grade of *B* or better is required for undergraduate courses taken to remove deficiencies in preparation for graduate study.

#### PROGRAM

A minimum of 24 semester hours of graduate courses and the thesis (6 semester hours) is required. An individual program is formulated by each student with the advice and assistance of a Faculty adviser, however, the student is wholly responsible for the adequacy of the program in preparing him for the comprehensive examination.

#### MASTER'S THESIS

The degree candidate must submit an acceptable thesis to demonstrate his ability to make independent use of the knowledge and discipline of thought acquired and developed by graduate study, to furnish objective evidence of constructive power in a given field, and to demonstrate that he can communicate the results of his work in writing. Work of a suitable character for which the student has professional responsibility may be considered, whether done on or off campus, provided no significant amount of work is completed without faculty supervision.

The thesis is the exclusive responsibility of the student. He may consult an adviser, but the adviser assumes no responsibility for the thesis.

The acceptability of the thesis is determined exclusively by the final comprehensive examination committee.

The candidate must submit his thesis subject to the Dean by the stated date for the semester in which he enrolls in the first thesis course



(Ap S 299, Engr 299, or EA 299). He must submit his thesis in final form to the Dean by the stated date for the semester in which he enrolls in the second thesis course (Ap S 300, Engr 300, or EA 300), except that in every case the final thesis must be submitted prior to the expiration of one calendar year from the date of submission of the thesis title. In case of failure to submit the final thesis as specified above, the student's candidacy and graduate study are terminated.

Candidates may enroll in the thesis course (299-300) one time.

A thesis may be submitted in final form one time. If the thesis is unacceptable to the final comprehensive examination committee the student's candidacy and graduate study are terminated.

#### COMPREHENSIVE EXAMINATION

The student must pass a comprehensive examination, written, oral, or both as prescribed by the Faculty, to demonstrate substantial understanding of principles and methods of their use in the area of his interest. This examination will not be taken until the candidate has successfully completed the prescribed program of study and submitted a Master's thesis. The candidate must successfully complete the final comprehensive examination, which is the basic requirement for award of the degree, on his first attempt. In the event of failure the student's candidacy and graduate study status are terminated.

## The Doctoral Program

The School of Engineering and Applied Science offers a program of advanced study and research leading to the degree of Doctor of Science. This program is limited to recognized fields in engineering or applied science in which a scientific discipline exists and for which the University has adequate resources.

The Doctoral discipline is designed to prepare the student for a career of creative scholarship by providing a broad background of knowledge and an understanding of research methods. It requires study of interrelated fields of learning as well as original research in the field of central interest.

The discipline for the degree is divided into two stages. The first — made up of a study of interrelated fields of learning which support the general area of research concentration — culminates in the qualifying examination. The second — composed of research investigation of a particular subject in a special field and the presentation of such research findings in a written dissertation — culminates in the final examination.

Detailed information on the program is provided in a separate publication obtainable on request.

### *Admission to Doctoral Study*

The applicant must have adequate preparation for advanced study, including a satisfactory Master's degree, or the equivalent, together with acceptable personal qualities and a capacity for creative scholarship. He must have capabilities and interests beyond the mere assimilation of organized materials in formal courses of instruction. Originality of

mind combined with balanced judgment and accuracy in observation or experiment are necessary to the successful applicant.

Well in advance of the opening of the semester for which the student seeks admission, he should have a personal interview with the Dean or the professor under whom he wishes to study, to discuss the field of study, the University's facilities for guidance in this field, the applicant's qualifications, and the possibilities of an effective doctoral program. If an application for admission is indicated, the student will be advised concerning the details of application procedure, and his application will be referred for admission decision to a committee on admissions appointed to consider his qualifications.

A reading knowledge is required of two foreign languages important in the student's field of interest. One language examination must be passed before beginning graduate study. The second must be passed before admission to the qualifying examination and within one year of the start of study for the qualifying examination.

Upon admission to study for the qualifying examination the student's admission committee becomes his Consultative Committee, which prescribes and directs his studies. The Committee assigns fields of learning to insure his breadth of knowledge and support research in his central field. Members of the Committee advise the student concerning the scope and content of these fields of study and guide him in preparation for his examination.

The purpose of the qualifying examination is to ascertain that the student's breadth of background and intellectual development are adequate to support doctoral research and investigation in his central field. The qualifying examination is both written and oral and usually extends over a period of six days. It is given by a special committee consisting of members of the student's Consultative Committee and other specialists. Upon favorable report of the examiners to the Dean the student is admitted to candidacy for the degree, to pursue his specialized study and research under the supervision of a designated member of the Faculty.

*The examination is the sole test of the student's ability to qualify for admission as a candidate for the degree, and to enter the second stage of his doctoral discipline.*

The student admitted to candidacy for the degree requests as Master in Research the member of the Faculty under whom he wishes to study. The Faculty member may accept or reject such request. The research is arranged by the Master and approved by the Dean. Throughout the remainder of the doctoral program, the candidate is responsible solely to his Master in his research and in the presentation of his dissertation.

#### THE DISSERTATION

A dissertation is required as evidence of ability to perform scholarly research and to interpret and present its results.

No later than the date specified in the calendar the candidate must submit to the Dean three complete copies of the dissertation (including a summary which is to be inserted as an appendix) together with a

#### *Application for Admission*

#### *Language Requirements*

#### *Study for Qualifying Examination*

#### *Research, the Dissertation, and the Final Examination*



fourth copy of the summary and a copy of the abstract for inclusion in the announcement of the examination. It is the responsibility of the candidate for a Doctoral degree to obtain from the Dean a printed copy of the regulations governing the styling and reproduction of the dissertation, which are rigidly enforced. The summaries of accepted dissertations will be printed in a numbered issue of the University BULLETIN. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation.

Accepted dissertations, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the Dean.

#### THE FINAL EXAMINATION

Upon approval of the dissertation by the Master, the candidate is presented for his final examination.

The final examination is oral and is open to the public. The candidate must demonstrate a mastery of his special field of interest and of the materials and techniques used in the research. The committee of examiners includes members of the Faculty competent in the research field or in closely related subjects and may also include qualified experts brought to the University especially to participate in the examination. If the candidate satisfies the examining committee concerning the high quality and originality of his contribution to knowledge as well as his mastery of the scholarship and research techniques of his field, the Faculty recommends him for the degree of Doctor of Science.

#### *Resident and Continuous Study*

All of the work for the degree must be done in residence (on the campus), except when special permission is granted to conduct research in an approved off-campus facility. The student must maintain "continuous registration" in the School, even when granted a leave of absence. Failure to do so breaks the student's registration, and he must apply for readmission to graduate study under whatever new conditions and regulations are set up by his consultative committee.

There is no formal regulation concerning the minimum amount of time to be spent in preparation for the qualifying examination or as a candidate engaged in doctoral research. The qualifying examination, however, must be completed within five years of the date of admission, and the entire degree program must be completed within seven years. After admission the student may apply for his qualifying examination whenever his consultative committee believes that he is prepared to take it; his research and specialized study may be undertaken with whatever concentration of time meets the approval of his research adviser. Normally a minimum of two years of full-time study and research is spent in meeting the requirements for the degree.



## THE CENTER FOR MEASUREMENT SCIENCE

THE CENTER, under the direction of the School of Engineering and Applied Science, is a cooperative activity of the University, industry, and government providing education, research, and service programs related to measurement. It was established by the University in 1960.

The principal, but not exclusive, activities of the Center are:

The education of persons for careers in measurement science;

The development and improvement of measurement, standardization, and calibration techniques, apparatus, and data — with particular reference to high precision.

The provision of staff and facilities to industry for research and consultation on measurement problems in industry, including the maintenance of primary standards of measurement directly traceable to the national standards.

The publication of results of research, manuals of practice and procedures, and information related to measurement science.

The Center maintains relations with industry and government through its Associate Program, in which interested individuals, companies, or other organizations may participate. The mutual communication, collaboration, and support made possible by this program bring vitality to the Center activities and insure attention to the needs of industry and government.

Through these and other activities the Center serves as a source of personnel competent in measurement science, as an instrument for collaborative research on measurement problems, and as a service organization providing expert capability to industrial and government organizations in the solution of their measurement problems.

## THE EDUCATIONAL PROGRAM

The Education Program of the Center consists in part of curricula offered by the School, which prepare the student to assume responsibilities in the field of measurement science. The curricula are integrated, to permit a student to terminate his formal education at any level, or to proceed to the next level. Programs lead to the Engineering Technologist Certificate and the degrees of Bachelor of Science, Master of Science, and Doctor of Science.

In addition to the certificate and degree programs, the education program includes seminars, special conferences, and short courses offered from time to time.

**Engineering Technologist Certificate** This is a two-year program open to high school graduates who meet the requirements for admission stated on pages 23 and 24.

### First Year

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Ap S 3:	Graphical Communication, 3
Ap S 4:	Logic and Method in Analysis, 3
Ap S 5:	Finite Mathematics and Statistics in Science I, 3
Ap S 105-6:	Fundamentals of Measurement Science I-II, 8
Math 27, 28:	Calculus I-II, III-IV, 12
Phys 1-2:	Introductory Physics, 8
	Total, 37

### Second Year

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Ap S 6:	Finite Mathematics and Statistics in Science II, 3
Ap S 10:	General Field Theory, 3
Ap S 11:	General Wave Theory, 3
Ap S 59-60:	Introductory Analytical Mechanics I-II, 10
Chem 13-14:	General Chemistry, 8
Engr 52:	Introductory Transducers and Instrumentation, 3
Math 111:	Mathematics for Engineers and Physicists I, 3
Phys 31-32:	General Physics, 4
	Total, 37

**The Research Program** The research program of the Center includes all aspects of research and development related to measurement science. Research and/or development may be undertaken as independent studies by staff members for the Center, as studies for a sponsor under contract, or by personnel of Associates of the Center assigned to the Center to undertake the specific work. Associates receive publications of the Center; certain publications may be restricted in distribution.

**The Service Program** The Center arranges for consultation and assistance of the Faculty and Staff and the use of the facilities of the Center in connection with specific problems in measurement. The program is restricted to the use of the Associates of the Center.

The Service Program also makes it possible for Associates to engage the various resources of the University, through the Center, as may be desirable and feasible, in solution of their problems in measurement.

## FEES AND FINANCIAL REGULATIONS

By authorization of the Board of Trustees, the following fees were adopted for the academic year 1964-65 and are subject to change.

### TUITION FEES

#### Undergraduate study:

Full-time program (12 or more hours a semester), \$650.00

Part-time program, for each semester hour, \$40.00

Master's study, including comprehensive examination,\* \$1,300.00

#### Doctor of Science:

For work leading to and including the qualifying examination, \$1,200.00

For work leading to and including the final examination, \$1,200.00

### ADDITIONAL COURSE FEES

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are charged by the semester and, unless otherwise indicated, may be defrayed in two payments when the tuition is paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

\* Any student admitted to Master's study may elect to pay the total fee at the beginning of his program or on a course-by-course basis at \$40 a semester hour until the total fee is paid.

Students completing payment of the total fee before completion of the required work (including thesis and comprehensive examination) will be granted registration on a "continuous registration—no charge" basis for one semester immediately following the semester in which tuition payment is completed.

Students requiring additional time for completion of required work after completion of payment of the total fee and the expiration of a semester "continuous registration—no charge" must register each semester and pay the normal "continuous registration" fee.



#### GRADUATION FEES

Engineering Technologist Certificate, \$10.00  
Bachelor's, Master's, Doctor's degrees, \$25.00

FEE FOR BINDING MASTER'S THESIS, \$6.00

FEE FOR PRINTING SUMMARY OF DOCTORAL DISSERTATION, \$85.00

#### SPECIAL FEES

Application fee (degree candidate), nonrefundable, \$15.00

Application for room reservation fee, \$100.00

Admission tests (when required), \$6.00-12.00

Graduate Record Examination fee (to cover two examinations), charged each candidate for a Bachelor's degree at the time of registration for the final semester of study (excluding summer sessions), \$10.00

Late registration fee, for failure to register within designated period, \$5.00

Change fee, for each change in program: dropping or adding a course, changing from one section to another within a course, change of status (from auditor to credit or vice versa), and change in credit hours for the course, \$2.00

Withdrawal fee, charged in special cases, \$5.00

Service fee, for deferred payment plan (see "Payment of Fees"), \$5.00

Reinstatement fee, for reinstatement after financial suspension, \$10.00

Continuous registration fee,\* to maintain "continuing student" status during any semester of absence from the University or after completion of tuition requirements. Due and payable on the official days of registration, \$40.00

Engineers' Council fee, charged each student in the School of Engineering and Applied Science for each semester or any part thereof except the summer term, \$1.50

For each examination to qualify for advanced standing and for each special examination, \$5.00

English test for foreign students (when required), \$5.00

Laboratory checkout fee, for failure to check out of Chemistry laboratory by the date deadline set by the instructor, \$3.00

Transcript fee, for each transcript of record, \$1.00

Registration in the University entitles each student to the following University privileges: (1) the services of the Placement Office; (2) the use of University library; (3) gymnasium privileges; (4) admission to all athletic contests, unless otherwise specified; (5) subscription to the *University Hatchet*, the student newspaper; (6) admission to University debates; (7) medical attention and hospital services as described under Health Services. These privileges terminate and a student is no longer in residence when he withdraws or is dismissed from the University.

#### PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or attend classes until all fees are paid.

Tuition and fees for each semester are due and payable in full at the time of each registration.

\* Payment of the continuous registration fee entitles the student who is granted leave of absence to return and continue his work toward a degree under the academic requirements which were in force at the time of his first registration. The continuous registration fee applies toward neither tuition fee nor residence requirements for the degree. (See also footnote on page 35.)

However, a student registered for six semester hours or more may sign a contract with the Office of the Cashier at the time of each registration permitting him to pay one-half of the total tuition and fees (except for fees payable in advance) at the time of registration and the remaining half on or before November 3, 1965 (for the fall semester) and March 16, 1966 (for the spring semester). A Service Fee of \$5 will be due and payable at the time of registration for the use of this deferred payment plan. The University will not obligate itself to notify the student in advance of the payment-due date for the second half of the semester charges. Students who fail to make any payment when due will be automatically suspended and may not attend classes until they have paid all accrued fees and a \$10 Reinstatement Fee and have been officially reinstated by the Office of the Cashier.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

Because many parents may wish some option in meeting and financing all or part of the cost of a college education, the University offers educational loan plans through the Girard Trust Corn Exchange Bank in Philadelphia, Pennsylvania; Funds for Education, Inc., Manchester, New Hampshire; and The Riggs National Bank, Washington, D. C.

Although similar in purpose, these plans vary somewhat in coverage and conditions. One year and multiple year plans are available. Insurance covering the life and health of the sponsor is provided through these plans.

Individuals over twenty-one years of age who are employed full-time are also eligible to apply. They may sponsor their own contracts, provided they meet the conditions specified by the plan for which they are applying.

Brochures and applications describing these plans are available in the Office of the Vice President and Treasurer.

## WITHDRAWALS AND REFUNDS

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the dean of the college, school, or division in which the student is registered. Notification to an instructor is not acceptable (see "Withdrawal," page 49).

In authorized withdrawals and changes in schedule, cancellations of semester tuition charges and fees will be made in accordance with the following schedule:

### 1. *Complete withdrawal* from the University:

#### Fall Semester

Withdrawal dated on or before September 24, 1965 . . . .	90 per cent
Withdrawal dated September 27 to October 8, 1965 . . . .	75 per cent
Withdrawal dated October 11 to October 22, 1965 . . . . .	50 per cent
Withdrawal dated after October 22, 1965 . . . . .	none



#### Spring Semester

Withdrawal dated on or before February 4, 1966 . . . . .	90 per cent
Withdrawal dated February 7 to February 18, 1966 . . . . .	75 per cent
Withdrawal dated February 21 to March 4, 1966 . . . . .	50 per cent
Withdrawal dated after March 4, 1966 . . . . .	none

2. For a change in status from full-time to part-time student or for partial withdrawal by a part-time student, the above schedule applies to the difference in charges between the original program and the adjusted program continuing in effect.

3. A student enrolled in a full-time program, who drops or adds a course and continues to be in a full-time program, will have no financial adjustments of tuition made other than those involving course fees.

In no case will tuition be refunded or reduced because of absence from classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this be credited to another semester.

Students in chemistry who fail to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a \$3 checkout fee. A student who drops a course before the end of the semester must check out of the laboratory at the next regular laboratory period.

Students enrolled in the ROTC who fail to turn in uniforms, equipment, and textbooks, on separation from the Corps, are charged the value of the missing items.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

Students are encouraged to provide their own cash funds until they can make banking arrangements in the community.





## FELLOWSHIPS, SCHOLARSHIPS, PRIZES, FINANCIAL AID

THE FOLLOWING FELLOWSHIPS, GRADUATE SCHOLARSHIPS, AND ASSISTANTSHIPS are available. Admission to graduate study is a prerequisite for consideration. Unless otherwise specified, a letter of application should be submitted not later than March 1 preceding the period for which the award is to be made. It should be directed to the Dean of the School and addressed to The George Washington University, Washington, D. C. 20006.

*University Teaching Fellowships.* — Assigned for the academic year. The applicant is expected to be a prospective candidate for a Doctoral degree in the general field of his future doctoral study. Each teaching fellow receives an annual stipend (on a nine-month basis) of up to \$2,200 plus tuition and laboratory fees for whatever schedule of study or research his fellowship duties permit him to carry. Tuition and laboratory fees may not exceed \$600. Stipends vary with the work load of the individual teaching fellow. Normally a University teaching fellow renders half-time service in classroom or laboratory assignments. Application should be made to the Dean.

*Graduate Teaching Assistantships.* — Open to candidates for the Master's degrees. Each graduate teaching assistant renders a designated unit of service, and receives, depending upon his teaching or laboratory assignment, up to \$2,200 on a nine-month basis plus tuition and laboratory fees for the program of studies which the duties of his assistantship permit him to carry. Tuition and laboratory fees may not exceed \$730. Application should be made to the Dean.

*National Aeronautic and Space Administration Predoctoral Fellowships.* — Fellowships, including tuition and stipends of from \$2,400 to \$2,800 (on a twelve-month basis), depending on the stage of the doctoral study, are available in the fields of the physical sciences, engineering, mathematics, statistics, economics, and business. Application should be made to the Graduate Council, The George Washington University, Washington, D.C. 20006, prior to March 15, for the following academic year.

*National Science Foundation Cooperative Graduate Fellowships.* — Fellowships at \$2,400 for twelve months or \$1,800 for nine months, with tuition waived, are available in the mathematical, physical, medical, biological, and engineering sciences and in certain other fields regarded as employing scientific methods. Application should be made to

### *Fellowships and Assistantships*

the Graduate Council not later than November 1 for the following year.

### *Scholarships and Prizes*

Scholarships are awarded for the academic year unless otherwise specified and are credited in equal parts for each semester. Each holder must carry a full schedule of academic work (fifteen semester hours or in the professional schools, the full prescribed schedule) during the period for which the scholarship is awarded.

A letter of application should be submitted on or before March first for the following academic year and, unless otherwise specified, should be addressed to the Director, Student Financial Aid. Awards are made during the month of April. All scholarships begin with the fall semester.

The following scholarships and prizes are limited to students in the School of Engineering and Applied Science. The University offers many others which are open to engineering students. A special bulletin containing a complete list and full information concerning teaching fellowships, scholarships, and prizes, may be obtained from the Director, Student Financial Aid, The George Washington University, Washington, D. C. 20006.

*Association of Federal Communications Consulting Engineers Scholarship (1958).*\* — A full-tuition scholarship, including laboratory fees and books. Available to a student of good character, promise, and leadership working toward the degree of Bachelor of Science (Communications).

*Frederick Albert and Alma Hand Britten Scholarships (1959).* — Bequest of Alma Hand Britten for scholarship aid to needy students preparing for the engineering profession. Application must be made not later than March 1 on forms which are available at the Office of the Dean of the School of Engineering and Applied Science.

*Henry Harding Carter Scholarship (1896).* — A \$500 scholarship established by Maria M. Carter in memory of her husband to aid a deserving student who is preparing for the civil engineering profession.

*School of Engineering and Applied Science Scholarships.* — Four scholarships are awarded each year to graduates of accredited high schools. Each scholarship provides full tuition for four academic years (excluding summer work and special fees), provided the student maintains an average of *B* and a satisfactory standard of deportment.

Applications must be made before March 1 for the following academic year. Application forms are available in the Office of the Dean of the School of Engineering and Applied Science.

*Henry Parsons Erwin Scholarship (1955).* — Established by Helen B. Erwin as a memorial to her husband, a former Trustee of the University. A partial scholarship for a student in Engineering or Applied Science.

*Norman B. Ames Memorial Award.* — Established by many friends of Professor Ames and awarded annually to a graduating senior of the School of Engineering and Applied Science who is nominated by his fellow students as having made significant contributions to the students

\* This scholarship is renewable and is, therefore, not available each year for award to an incoming freshman.



in the School of Engineering and Applied Science and to the School and University.

*Martin Mahler Prize in Materials Testing.* — A one-year membership in the American Society for Testing Materials awarded to the upper division or graduate student in engineering who submits the best reports on tests in the Materials Laboratories course with preference given to prestressed concrete tests.

*School of Engineering and Applied Science Distinguished Scholar.* — A certificate awarded annually by the Faculty of the School of Engineering and Applied Science to the senior who graduates with the highest scholastic standing. The student's name is engraved on a plaque displayed in Tompkins Hall.

*Sigma Tau Prize.* — A medal awarded annually by the XI Chapter to the freshman in the School of Engineering and Applied Science who maintains the highest scholastic standing in the work of the entire year.

*Theta Tau Activities Plaque.* — A plaque awarded annually by Gamma Beta Chapter to the senior in the School of Engineering and Applied Science with the most outstanding record in activities for the entire period of his attendance.

The following loan funds are available to students in the University in accordance with the qualifications placed thereon by the donors. Students should direct inquiries to and file applications with the Office of the Vice President and Treasurer.

#### *Financial Aid*

*National Defense Student Loan Fund.* — This fund is available to full-time undergraduate and graduate students who are in need of financial assistance. Priority is given applicants who express a wish to teach in elementary or secondary schools, and whose academic background indicates a superior capacity or preparation in science, mathematics, engineering, or a modern foreign language. After application for admission to the University has been completed, application on forms prescribed for this loan must be filed in the Office of the Vice President and Treasurer no later than (1) for the *fall semester* — June first for students currently registered in the University and July first for entering students; (2) for the *spring semester* — November fifteenth; (3) for the *Summer Sessions* — May first.

*United Student Aid Funds.* — This fund is available to full-time students who have completed their freshman year and are in need of financial assistance. Monthly repayments begin after student finishes either undergraduate or graduate education. After application for admission to the University has been completed, application on forms prescribed for this loan fund must be filed in the Office of the Vice President and Treasurer no later than (1) for the *fall semester* — June first for students currently registered in the University and July first for entering students; (2) for the *spring semester* — November fifteenth; (3) for the *Summer Sessions* — May first.

*John Brewster Willis, Jr., Loan Fund in Mechanical Engineering.* — A fund of \$1,515, established by Mrs. William L. Lane as a memorial to her nephew, John Brewster Willis, Jr., is available to Mechanical Engineering students (graduate or undergraduate) who are primarily interested in aeronautics.



## Residence Halls

COMPLETE INFORMATION concerning the University's residence halls is available at the Office of the Dean of Men or the Office of the Dean of Women, The George Washington University, Washington, D. C. 20006.

Information concerning off-campus housing near the University may be obtained at the Office of the Dean of Men. The reservation of rooms in private houses must be made by students.

Admission to the University does not include a room reservation. A separate application for a room should be made well in advance (for the fall semester by May first, for the spring semester by January first). Rooms are leased for the academic year, and a deposit of \$100, which is credited toward the fall semester room charge, is required. If notice of withdrawal or cancellation of room reservation is received prior to June first, \$50 of the deposit will be refunded. Room rentals are payable in advance by the semester.

### RESIDENCE HALL RATES FOR TWO SEMESTERS — 1964-65

	<i>Room and Food Service</i>	<i>Room only</i>
<i>For Men:</i>		
Adams Hall: double room.....	\$900	—
Adams Hall: triple room.....	850	—
Crawford Hall .....	900	—
Calhoun Hall .....	900	\$400
Madison Hall (Graduate and Professional Students) ..	920	420
Welling Hall .....	820	320
<i>For Women:</i>		
New Residence Hall .....	\$950	—
Strong Hall: double room.....	950	\$450
Strong Hall: single room.....	1,035	535

## FOOD SERVICE

Residents of the new Women's Residence Hall, Crawford and Adams halls participate in a room and food service plan. The food service is optional for the residents of Calhoun, Madison, Strong, and Welling Halls. Meals may be taken either at the new Women's Residence Hall or in the Residence Hall dining room at the Student Union. Well-balanced meals are served cafeteria style seven days per week (20 meals). Food service payment does not cover University holidays or vacation periods.

All unmarried women students under twenty-two years of age and enrolled for twelve or more hours of academic work during the fall or spring semester or six or more hours during a summer session are required to live in the University residence halls or at home with their parents. Upon written approval of their parents and the permission of the Dean of Women, freshman women may live with immediate relatives and upperclass women may live with contemporaries of their parents. Under *no* circumstances may an unmarried woman student under twenty-two years of age taking a full academic program live in an apartment with her contemporaries.

All unmarried freshman men under twenty-one years of age and enrolled for twelve or more hours of academic work during the fall or spring semester or six or more hours during a summer session are required to live in the University residence halls, or at home with their parents. In exceptional cases permission to live elsewhere may be given a student by the Dean of Men.



## REGISTRATION

A STUDENT CANNOT REGISTER FOR CLASSES UNTIL he has received a letter of admission to the University, issued by the Office of the Director of Admissions.

No registration is accepted for less than a semester or one summer session.

A student may not register concurrently in the School of Engineering and Applied Science and in another institution or another division of this University without the prior permission of the Dean. Allowance of credit for work done concurrently at another institution will be at the discretion of the Dean's Council.

For the dates and hours of registration, see the calendar, page 7.

### *Eligibility for Registration*

Registration for the following categories of on-campus students is held on the days of registration stated in the University Calendar. No student who is suspended or whose record is not clear for any reason is eligible to register.

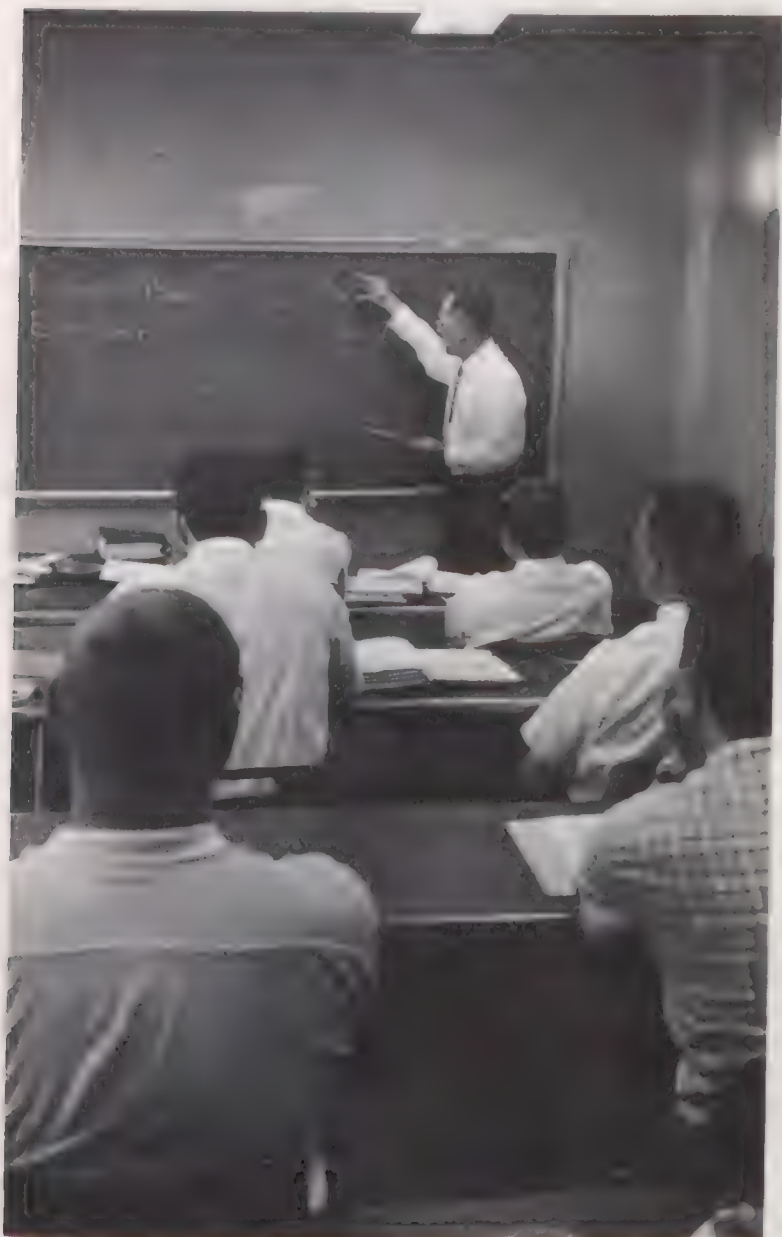
*New Student.* — Upon receipt of a letter of admission from the Office of the Director of Admissions, the new student is eligible for registration.

*Readmitted Student.* — A student previously registered in the University who was not registered on campus during the preceding semester or summer session must apply for and receive a letter of readmission from the Office of Admissions, before he is eligible for registration. A student registered for the spring semester of 1964-65 need not apply



for readmission for the fall semester of 1965-66. Such a student is a "Continuing Student."

*Continuing Student.* — The student registered on campus in the immediately preceding semester of the academic year is eligible to register upon presentation of his student identification card from the previous semester. The student registered for the 1965 Summer Sessions, and not restricted to summer registration, is eligible for registration for the 1965-66 fall semester upon presentation of his 1965 Summer Sessions student identification card.



## REGULATIONS

A STUDENT WHO WITHDRAWS OR IS SUSPENDED, or is otherwise absent from the University for one semester or more, must apply for readmission and, if admitted, may continue his work only under the rules and regulations in force at the time of his return.

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Faculty) for subsequent registration in any unit of the University.

*Attendance* A student may not attend classes until registration is completed and fees due are paid. A student may be dropped from any course for undue absence.

A student suspended for any cause may not attend classes during the period of suspension.

The student is expected to attend every meeting of the course in which he is registered, fully prepared to carry on the work required. The student is held responsible for all work in the course, and all absences must be excused before provision will be made for him to make up the work missed. Excuses for absences from examinations which have been announced in advance can be obtained only by making written application to the instructor in charge of the course.

*Amount of Work* A full-time undergraduate student who is not on probation may take no more than 20 semester hours. A student employed more than 24 hours a week who is not on probation may take no more than 10 semester hours. In exceptional cases these limits may be exceeded with the Dean's permission.

A student previously unemployed who accepts employment after registration must immediately report that fact to the Dean so that his schedule may be adjusted if necessary.

An undergraduate student must maintain a cumulative quality-point index of at least 2.00.

A graduate student must obtain a grade of "Satisfactory" or higher in every course attempted.

## Scholarship Requirements

### GRADES

Grades are mailed to the student through the Office of the Registrar at the close of each semester. They are not given out by instructors.

*Undergraduate.* — The following grading system is used: *A*, excellent; *B*, good; *C*, average; *D*, passing; *F*, failing; *CR* indicates credit. Whenever a grade has not been assigned the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded.

*Graduate.* — For graduate work, grades are indicated as *E* (excellent), *S* (satisfactory), *U* (unsatisfactory), *I* (incomplete), *CR* indicates credit.

An "incomplete" grade cannot be removed by registering for and taking the same course another time. An "incomplete" grade is given by an instructor only for reasons satisfactory to the instructor and presented to him before the last day of classes for the semester in which the course is given.

An "incomplete" cannot be made up after the lapse of one calendar year except by written permission of the dean's council of the college, school, or division concerned. An incomplete which is not removed within one calendar year is automatically changed to an *F*. A student may not repeat for grade a course in which he has received a grade of *D* or above, unless required to do so by the department concerned. A written statement to this effect must be submitted to the Registrar by the Dean.

### THE QUALITY-POINT INDEX

*Undergraduate.* — Scholastic standing is computed in terms of the quality-point index, obtained by dividing the number of quality points by the number of semester hours for which the student has registered, both based on the complete record in this University applicable to the degree objective of the student.

Quality points are computed from grades as follows: *A*, four points; *B*, three points; *C*, two points; *D*, one point; *F*, no points, for each semester hour for which the student has registered. Courses marked *W* or *I* are not considered in determining the index, except that courses marked *I* will be considered when a formal grade is recorded. An incomplete which is not removed within one calendar year is automatically changed to an *F*. Grades in courses taken at another institution are not considered in computing the quality-point index.

In order to graduate, a student must have a quality-point index of at least 2.00 in all work taken at this University and accepted in the School of Engineering and Applied Science.



*Mid-semester Warning.*—At the end of the seventh week of each semester, instructors report to the Dean the names of students whose scholarship is unsatisfactory. On receipt of a warning notice the student must consult his instructor and his adviser immediately.

The adviser may prescribe diagnostic tests and/or remedial study to be completed before the end of the current semester.

*Probation.*—A student whose quality-point index falls below 2.00 is placed on probation. This probation extends over the period in which the student completes a minimum of 12 semester hours of study and may be extended over a longer period.

A student on probation may be required to follow a program of study including remedial studies as prescribed. He may not hold office, participate in the activities of any student organization, or represent the School in any student activity.

*Suspension.*—A student whose quality-point index is below 2.00 at the end of his probationary period is suspended. A student whose index falls below 2.00 after removal from probation is suspended.

At the time of his suspension a student may apply to the Dean's Council for guidance concerning remedial action he should take during the period of his suspension.

A student suspended for poor scholarship may apply to be readmitted in the semester or summer session which begins next after an interval of one calendar year. To be considered for readmission he must pass prescribed tests. A student readmitted after suspension is on probation. He must maintain a current quality-point index of at least 2.50 on each 12 semester hours of work undertaken until his cumulative index is 2.00. In no case will the probationary period after readmission exceed 24 hours of study. A student suspended twice for poor scholarship will not be readmitted.

#### ACADEMIC DISHONESTY

Evidence of dishonesty on the part of any student will result in his suspension from the University upon the recommendation of the appropriate dean's council.

A student found guilty of dishonesty will be suspended for a stated period and will be deprived of credit for all courses in which he is enrolled during the semester in which the dishonest act occurs. A disciplinary grade of "Failure—Academic Dishonesty" will be recorded for each such course, and this grade will be employed in computation of the quality-point index.

If a student suspended because of academic dishonesty should be readmitted, he may be required to repeat for grade all courses for which a disciplinary grade has been recorded, and both the grade earned on repetition and the disciplinary "Failure—Academic Dishonesty" grade will be employed in computation of the quality-point index.

#### HONORS LIST

The Faculty of the School of Engineering and Applied Science recognizes meritorious scholastic achievement by an Honors List, containing

in alphabetical order the names of candidates for undergraduate degrees whose scholastic achievement satisfies all of the following requirements:

1. The candidate's quality-point index is equal to or exceeds 3.00 on 15 semester hours in one semester.
2. No grade below C has been received during the qualifying period.
3. No disciplinary action has been taken in respect to the student.

The Honors List is prepared at the end of the fall and spring semesters and displayed in an appropriate public place in the School. A notation is made on the student's record each time his name is included in the List.

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the Dean of the School. Notification to an instructor is not an acceptable notice.

Withdrawal from a course or from the University, *without academic or financial penalty*, requires the permission of the Dean of the School. Permission to withdraw from the University will not be granted a student who does not have a clear financial record.

Withdrawal from any course without academic penalty after the fourteenth day following the first day of classes of a semester may be granted by the Dean under the following conditions: (1) exceptional circumstances make the request necessary; (2) the request is submitted on the official form for late withdrawal; (3) as of the date of request, the grades in all courses involved are C or better.

In the exceptional circumstances mentioned above the Dean may authorize withdrawal without academic penalty. In all cases financial regulations governing withdrawal remain in full effect.

Withdrawal between the last working day\* in October and the end of the fall semester and between the last working day\* in February and the end of the spring semester is permitted only in exceptional cases.

*All charges for courses dropped without the approval of the Dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.*

A student may not withdraw from either the basic course or the advanced course of the Air Force ROTC without the approval of the President of the University.

After the registration period a student may not make any changes in his registration without the approval of the Dean. Requests for changes in registration must be made on forms provided in the Office of the Dean.

During the seven days following the first day of classes of a semester, additional courses may be added to the student's program with the approval of the instructor, the student's adviser, and the Dean.

Courses may be dropped without academic penalty only during the fourteen days following the first day of classes, with the approval of the instructor, the student's adviser, and the Dean.

A graduate student may withdraw from a graduate course without academic penalty only within the first four weeks of a semester.

### *Withdrawal*

### *Changes in Program of Studies*

\* The University work week is Monday through Friday, inclusive.



*Credit* Credit toward a degree is given only after registration for and satisfactory completion of the required work of classes or upon the granting of advanced standing in accordance with the regulations of the School. A student who takes a course as an auditor may not take the same course later for credit.

On request the Registrar will issue to undergraduate degree candidates a balance sheet showing the amount of work completed and the requirements remaining to be met for the degree.

#### TRANSCRIPTS OF RECORD

Official transcripts of student records will be issued on request of the student or former student. A fee of one dollar is charged for each transcript. No certificate of work done will be issued for a person who does not have a clear financial record.

#### SUMMER SCHOOL CREDIT

A student who plans to attend summer school sessions at another institution and transfer credits so earned toward graduation from this University must first secure the written approval of the Dean. Transferred credits will not be recognized in excess of those which might be earned in a similar period in this institution.

*Use of Correct English* Any student whose written or spoken English in any course is unsatisfactory may be reported by the instructor to the Dean. The Dean may assign supplementary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed for failure to make up any such deficiency in English to the satisfaction of the Dean.

*Continuous Registration* Degree candidates are expected to maintain continuous registration until *all* degree requirements are satisfied. Students who have completed course registration (including the thesis) maintain continuous registration by paying the "continuous registration" fee (see page 36). By failing to register for one semester or more, the student breaks his registration and must be readmitted (see "Readmission," page 25). A "Readmitted Student" is required to satisfy the curriculum requirements existing at the time of his readmission.

Students must be registered during the summer if they elect to take courses, are taking required examinations, are receiving guidance toward theses or dissertations, or are expecting to graduate at the end of the Summer Sessions.

*Graduation Requirements* To be recommended by the Faculty for graduation a student must have met the admission requirement of the School, completed satisfactorily the scholarship, curriculum, residence, and other requirements for the certificate or degree for which he is registered,\* and be free from all indebtedness to the University.

\* Registration, either for course work or on the "continuous registration" fee basis, is required for the semester or summer session immediately preceding the awarding of the degree.



*Application for Graduation.* — Application for a certificate or degree must be filed and the appropriate fee paid at the time of registration for the last semester or summer session of the senior or final year.

Students expecting to complete requirements for degrees during the summer session must apply for graduation as a part of registration for the summer session.

*Curriculum.* — Curriculum requirements for the Engineering Technologist Certificate are stated on page 34; for the Bachelor's degrees, on pages 13–23; for the Master's degrees, on pages 29 and 30.

*Graduate Record Examination.* — All candidates for Bachelor's degrees must take two parts of the Graduate Record Examination in the University's institutional testing program. The examinations are conducted by the University twice a year: the Fall Testing Session, for seniors graduating in February, and the Spring Session, for those graduating in June. Dates of the examinations are announced in the *Schedule of Classes*.

Each senior required to take the Graduate Record Examination must register for it in the Office of the Dean when he registers for his final regular semester of study (excluding Summer Sessions). A \$10 examination fee is payable at the time of registration.

Students receive individual reports of test scores and may avail themselves of the transcript services of the Educational Testing Service. By special permission seniors who expect to graduate in June may take the Graduate Record Examination at the previous Fall Testing Session, so as to have transcripts available early in the year when applying for admission to graduate schools.

*Residence.* — For the Engineering Technologist Certificate, a minimum of 30 weeks and the last 30 semester hours must be completed in residence.

For the Bachelor's degrees, a minimum of 30 weeks and 30 semester hours must be completed in residence. Summer work may be counted. Unless special permission is granted by the Dean to study elsewhere, the work of the final year must be completed in residence.

The graduate student must meet the residence requirements for the degree for which he is registered.

*Attendance and Conduct.* — The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

*Thesis or Dissertation.* — A thesis or dissertation submitted in partial satisfaction of requirements for a Master's or Doctor's degree, respectively, must be presented in its final form to the Dean no later than the date specified in the calendar. Three complete copies are required.

*Graduation in Absentia.* — Application for graduation *in absentia* must be submitted to the Dean.

#### HONORS

*With distinction.* — A Bachelor's degree may be conferred "with distinction," at the discretion of the Faculty, if a student attains a quality-point index of 3.50 or higher on all work taken at this institution. To be eligible for this honor a student must have completed at this institution at least one-half of the work required for the degree.

*Special honors.* — A Bachelor's degree may be conferred with "Special honors," at the discretion of the Faculty, for outstanding achievement in the student's Advanced Level work on recommendation of the Faculty, under the following regulations:

1. The student must have his candidacy for special honors approved by the faculty member representing the major field not later than the beginning of the Advanced Level study.

2. The student must meet such other conditions as may be set at the time his candidacy is approved.

3. No student will be awarded special honors unless he has a quality-point index of at least 3.00 on all work taken at this institution.

4. To be eligible for honors a student must have completed at this institution at least one-half of the work required for the degree.

*The Library* A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card, issued upon the payment of fees, must be presented as identification.

The loan period for most books available for home circulation is two weeks, with an additional two-week renewal. A fine of five cents will be charged for each day a book is overdue. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

#### HOURS

The University Library is open from 9:00 a.m. to 10:00 p.m. each class day (Saturday 9:00 a.m. to 5:00 p.m.), and from 2:00 to 6:00 p.m. on Sunday.

*Right to Dismiss Students* The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

*Right to Change Rules* The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

*Property Responsibility* The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.



## STUDENT SERVICES AND ACTIVITIES

THE HEALTH SERVICES STAFF ASSISTS STUDENTS with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open from 9 a.m. to 5 p.m., Monday through Friday, during the academic year and Summer Sessions, with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge. For night and week-end emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Services, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.

### *Health Services*

Medical privileges include: (1) physical examination of all students who are applicants for courses in Physical Education;\* (2) three visits in any one illness by a member of the Health Services Staff, office or residence (District of Columbia); (3) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period — the necessity to be determined by the Director of Health Services.† All additional hospital charges for operating room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye refraction and provision of glasses; orthopedic examinations and application of cast or other appliance; laboratory and X-ray work; and surgical operations must be paid by the student.

This medical benefit applies only to illness or disability incurred

\* A charge for a special physical examination is made by the University if a student fails to appear for a physical examination during the period set for this purpose.

† See rule (5) for exception.



while currently enrolled in the University. It does not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Services is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Services has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each semester; (5) hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the physical education departments.

*Veterans Education* The personnel of the Office of the Dean of Men act as advisers to veterans and war orphans and in a liaison capacity between the University and the Veterans Administration. This Office should be consulted concerning educational benefits before applying to the Veterans Administration for certification. The Veterans Administration is at 1717 Massachusetts Avenue NW., Washington, D.C. 20421.

#### PUBLIC LAW 634 (WAR ORPHANS' EDUCATIONAL ASSISTANCE ACT)

A child of a person who died of a disease or injury incurred or aggravated while on active duty in the Armed Forces during World War I, World War II, or the Korean Conflict; or a child of a person who has a total disability, permanent in nature, resulting from a service connected disability arising out of service in the above periods; or a child of a person who died as a result of such a disability, may be eligible for educational assistance under this Act, if certain age requirements are met. In the case of a child who has not reached the age of majority, his guardian must make application for him to the Veterans Administration.

#### PUBLIC LAW 550 (KOREAN GI BILL)

Benefits under Public Law 550 terminated on January 31, 1965.

#### PUBLIC LAWS 16, 894, AND 87-815 (VOCATIONAL REHABILITATION)

Disabled veterans desiring vocational rehabilitation under these laws should apply to the Veterans Administration for approval of their training objectives at least sixty days prior to registration.

A brochure describing the Air Force ROTC program in detail is available on request to the Division of Air Science, The George Washington University, Washington, D.C. 20006.

#### *Air Force ROTC Program*

The Testing and Counseling Center, 718 Twenty-first Street NW., offers services which are available primarily to students enrolled in the University, and secondarily to high school students and to adults of the community.

#### *The Testing and Counseling Center*

The services are designed to assist individuals in the evaluation of their educational and vocational potentialities and objectives, diagnose academic difficulties, provide educational and vocational literature and information, and refer individuals to qualified agencies for assistance with problems not handled by the Center.

The Center provides special testing services including: diagnostic tests prescribed by the School of Engineering and Applied Science, admissions tests for the University and for other selected educational institutions, and tests for business and industry.

*Fees.* — For students who are currently registered as degree candidates in the University, the fee is \$10; for students currently enrolled in the University but not as degree candidates, the fee is \$40; for graduates of the University, \$40; for community clients, \$65. Fees for specialized testing are dependent upon the services involved. All fees are payable at the Office of the Center.

The Reading Center, 2018 Eye Street NW., offers individual diagnostic and corrective services for all levels; primary, elementary, secondary, and adult. In addition special reading improvement classes are conducted on the high school and adult level.

#### *The Reading Center*

A complete diagnosis includes psychological tests; vision, hearing, and dominance tests; and the various reading and spelling tests. Results are interpreted and a written report is presented in conference with the parents or the individual.

The special reading classes for high school students and adults are offered throughout the year at stated intervals. Emphasis is placed on improvement of vocabulary, speed, comprehension, and study skills. Machines such as the tachistoscope, rate accelerator, and controlled reader are also used for increasing speed of comprehension.

*Fees.* — The fee for individual diagnosis is \$45; for individual instruction, \$6 a lesson; for semi-individual instruction, \$5 a lesson; for instruction in small groups with common reading difficulties, \$3.75 a lesson (\$3.25 for students currently registered in the University). All fees are payable in advance at the Office of the Cashier.

The Speech Clinic, Lisner Auditorium, 730 Twenty-first Street NW., offers diagnostic and corrective work for children and adults with such speech difficulties as stuttering, lisping, cleft palate, cerebral palsy, aphasia, foreign accent, voice, and articulatory problems.

#### *The Speech Clinic*

*Fees.* — There is no charge for the diagnosis. The fee for individual instruction is \$7 an hour; for group instruction, \$4 an hour. Fees are payable at the Office of the Cashier.

The Student Union, 2125 G Street NW., and the Student Union Annex are centers of student life on the University Campus. The

#### *Student Union*



Cafeteria on the first floor of the Union building serves breakfast, lunch, and dinner as well as snacks. The second floor is reserved as a dining hall for resident students, and the third floor features a modern vendeteria and delicatessen. The fourth floor contains a reading room for study and relaxation. The Student Union Annex houses offices for the Student Council, other campus organizations, and student publications. The Student Activities Office, also in the Annex, has information concerning student organizations and campus events. The facilities of the Student Union make it possible for the nonresident student to participate more fully in campus life.

*University Book Store* The University Book Store is in a separate building at the quad entrance to the Union. The Book Store carries a wide selection of school supplies and sundry items in addition to text books for all courses.

*Davis-Hodgkins House* The Davis-Hodgkins House, 731 Twenty-second Street NW., is the student center of the School, providing lounges, reading rooms, and student organization offices. The House provides convenient, comfortable facilities for the exchange of ideas and good fellowship.

*International House* International House, 2110 G Street NW., is the social center for students from foreign countries. A series of teas, dances, and other forms of entertainment, and the use of club rooms and lounge enable students to become acquainted and feel at home in the University.

The International Students' Society welcomes as members students from other lands as well as North American students. The Director of Foreign Student Affairs, whose office is in International House, is available for advice and guidance.

*The Placement Office* The Placement Office, 2114 G Street NW., provides assistance to students and alumni seeking full-time, part-time, temporary, or permanent employment. The Office maintains a registry of positions available in many fields, both locally and nationally, and refers qualified applicants for consideration. The Office administers the On-Campus Industrial and Government Recruitment Interview Program for seniors and graduate students, in which well over 150 private companies, as well as certain government agencies participate. This program offers outstanding employment opportunities to persons seeking career positions.

Students and alumni interested in placement are asked to register in person at the Office and to select from written descriptions of current openings positions for which they wish referral. Those interested in planning careers are invited to study the information on career fields and the brochures of business, industry, and government, which are on display in advance of campus visits by recruiting officers. The services of the Counseling Center are available to students and alumni wishing career guidance.

The Placement Office is open from 9:00 a.m. to 5:00 p.m., Monday through Friday.

#### *Student Activities* DIRECTORS OF STUDENT ACTIVITIES

The University maintains the offices of the Dean of Men and the Dean of Women, for the guidance of students in all nonacademic phases of student life, such as student activities, social life, and housing. The



deans are available for individual counseling concerning personal adjustment to university life.

#### STUDENT GOVERNMENT

*Student Council.* — The Student Council, which is elected annually by the Student body, is responsible for the conduct of student activities.

*Committee on Student Life.* — The Committee on Student Life is the judicial branch of the student government. It is composed of not more than seven members of the faculty, two of whom are the Dean of Men and the Dean of Women, appointed by the President of the University, and the following members: President of Student Council, an Editor of the *Hatchet*, President of Mortar Board, President of Omicron Delta Kappa, President of the Interfraternity Council, and President of Panhellenic Council. This Committee has the power to review the acts of all student organizations, including the Student Council, and set aside acts that are contrary to established policy and regulations of the University or the Committee. It is granted authority to approve or disapprove the establishment of any proposed organization on campus. No student club or society (except social fraternities, sororities, scholastic honor societies, religious or professional clubs or societies) organized as a branch or affiliate of a non-George Washington University organization will be recognized by the Committee on Student Life.

#### ELIGIBILITY FOR STUDENT ACTIVITIES

Any student registered in The George Washington University is eligible to participate in nonathletic student activities of the University; however, a student having a scholastic average of less than 2.00 is not eligible to be:

1. A member of the Band, Dance Production Groups, Enosinian Debating Society, Glee Club, Cheerleaders, Student Council, Religious Council, Panhellenic Council, Interfraternity Council, Engineers' Council, Student Life Committee, Residence Hall Councils, or any publications staff.
2. An officer, permanent committee chairman, or member of the executive board of any activity.

#### THE ENGINEERS' COUNCIL

The Engineers' Council is the student governing body for the School of Engineering and Applied Science, composed of elected representatives from each level class and from the graduate student body, from each student organization in the School, the Business Manager of the *Mecheleciv*, and the House Manager of the Davis-Hodgkins House. The purpose of the Council is to provide liaison between the student body of the School and the Faculty, Administration, and Student Government of the University in all matters affecting the general interests and welfare of the student body, the School, or the University. The Council is maintained financially by the Engineers' Council Fee paid by each student in the School, and sponsors the engineers' student magazine, *Mecheleciv*; the Engineers' Mixers; Engineers' Ball; and the Annual Christmas Tree Ceremony in the University Yard. Council meetings are open to all students in the School.

The Council acts as the directing body for *Mecheleciv*, which is published six times a year and is free to all students in the School. This magazine includes campus and alumni news, a calendar of events, news of the student organizations, and articles on engineering by students and faculty members. The magazine is published by a student Board of Editors and a volunteer student staff.

The control and administration of all student activities are outlined in a separate bulletin.

#### SPORTS ACTIVITIES

The University is a member of the Southern Conference and the National Collegiate Athletic Association. Its teams participate in inter-collegiate contests in football, basketball, baseball, tennis, golf, rifle, sailing, and crew.

The University maintains a complete program of intramural sports for both men and women. The men's program is conducted by the Intramural Council. The Women's Athletic Association and Intersorority Athletic Board cooperate with the department of Physical Education in conducting the women's intramural and informal extramural sports program in tennis, hockey, basketball, rifle, swimming, golf, bowling, and badminton.

#### PERFORMING ARTS

Students may participate in dance, drama, forensics, and music through the following organizations: Dance Production Groups I, II, III (Modern Dance) and Folk Dance; Enosinian Debating Society; Folk Music Society; University Players; University Glee Club; and University Orchestra. Each of these groups presents programs during the academic year.

With the cooperation of the Curator of Art, an annual student art exhibit is presented.

#### ANNUAL EVENTS

*Colonial Program.* — The Student Council sponsors a variety of programs to which all students are invited.

*Recreation Program.* — The Student Council and the Dance Production Groups arrange dances — square, folk, and social — at frequent intervals for all students.

*Concert Program.* — The Student Council sponsors a concert each semester at which well known entertainers perform.

*Orchestra Series.* — The University Orchestra offers a series of concerts throughout the academic year.

*Engineers' Mixers.* — At the beginning of each semester the Engineers' Council sponsors a program of orientation, good fellowship, and entertainment to introduce new students.

*Engineers' Week.* — Sponsored by the Engineers' Council to acquaint high school students and their parents with the School of Engineering and Applied Science.



*Homecoming.*—Scheduled about the middle of the fall semester, Homecoming is the primary festive period of the school year. It includes the annual Pep Rally and homecoming show, the homecoming football game, and the homecoming dance.

*Religion in Life Program.*—Special emphasis is given to the place of religion in contemporary society in this program of events during the fall and spring semesters. It is sponsored by the University Chapel.

*Holiday Season.*—The University traditionally greets the holiday season with appropriate ceremonies including the lighting of the Christmas tree (given and decorated by the Students of the School of Engineering and Applied Science), the singing of Handel's Messiah, and the observance of a special Christmas service at the University Chapel.

*Engineers' Ball.*—The Engineers' Council sponsors the Engineers' Ball, a social event for students and alumni.

*May Day.*—This is the traditional time for the award of honors in student activities. Mortar Board and Omicron Delta Kappa announce and present their new members.

#### HONOR SOCIETIES

*Sigma Xi.*—A national scientific honor society, the purpose of which is to encourage original investigation in science, pure and applied. Outstanding graduate students in the sciences are eligible for full membership, and undergraduates who have shown marked ability in research may be elected to associate membership.

*Omicron Delta Kappa.*—A national fraternity emphasizing leadership in extracurricular activities.

*Order of Scarlet.*—A service honorary society for sophomore and junior men.

*Phi Eta Sigma.*—A national fraternity, established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman men who attain a scholastic average of at least 3.50.

*Sigma Tau.*—A national engineering honorary fraternity, the purpose of which is to recognize scholarship and professional attainment.

*Tau Beta Pi.*—A national engineering honorary fraternity, the purpose of which is to recognize distinguished scholarship and exemplary character.

#### PROFESSIONAL ORGANIZATIONS

*Institute of Electrical and Electronic Engineers (Student Chapter).*

*American Society of Civil Engineers (Student Chapter).*

*American Society of Mechanical Engineers (Student Chapter).*

*Theta Tau (Gamma Beta Chapter).*—A national professional (engineering) fraternity. Membership by invitation to outstanding students who have completed successfully at least the first year in the School of Engineering and Applied Science.

#### *Student Organizations*



#### OTHER ORGANIZATIONS

Alpha Theta Nu (scholarship winners), Big Sisters, Cheerleaders, Chess Club, Colonial Boosters, Foggy Bottom Sports Car Club, Interfraternity Council, International Students' Society, Inter-sorority Athletic Board, Junior Panhellenic Association, Old Men, Residence Hall Councils, Rifle Club, Senior Panhellenic Association, Station WRGW, Student Council, University Pep Band, Wandering Greeks, Young Democrats Club, Young Republican Club.

#### SOCIAL FRATERNITIES

Sigma Chi, Kappa Sigma, Phi Sigma Kappa, Sigma Alpha Epsilon, Sigma Phi Epsilon, Phi Sigma Delta, Sigma Nu, Tau Kappa Epsilon, Pi Kappa Alpha, Tau Epsilon Phi, Alpha Epsilon Pi, Delta Tau Delta.

#### SOCIAL SORORITIES

Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Kappa Delta, Phi Sigma Sigma, Zeta Tau Alpha, Kappa Kappa Gamma, Delta Gamma, Kappa Alpha Theta, Alpha Epsilon Phi, Sigma Delta Tau.

#### STUDENT PUBLICATIONS

*The Cherry Tree* (the annual), *The University Hatchet* (weekly newspaper), *Mecheleciv* (engineer's publication), *The Potomac* (literary magazine), *The Student Handbook*.

**Religious Life** The University recognizes the contribution that religion makes to the life of its students and encourages them to participate in the various religious organizations of their own choice. Catholic, Jewish, and Protestant bodies sponsor these groups and form a link between the University and the religious community. The advisers of the religious organizations are available for counseling.

#### UNIVERSITY CHAPEL

The University Chapel is maintained as a nonsectarian service of worship for the University community. The service is held Wednesday of each week from 12:10 to 12:30 o'clock at 1906 H Street NW. Among the guest speakers are representative clergymen of Washington. The Director of University Chapel is available for counseling and conference.

#### RELIGIOUS ORGANIZATIONS

Baptist Student Union, B'nai B'rith Hillel Foundation, Canterbury Association, Christian Science Organization, Eastern Orthodox Club, Lutheran Student Association, Newman Club, Student Christian Fellowship, Unitarian Club, United Christian Fellowship, Wesley Foundation, and a Religious Council comprised of representatives of all religious organizations.

## COURSES OF INSTRUCTION

THE COURSES OF INSTRUCTION in the School of Engineering and Applied Science are listed on the following pages. Courses numbered from 1 through 199 are planned for undergraduate credit, certain courses specified in the Advanced Level options may be taken for graduate credit when arrangements are approved in advance by the instructor and the Dean; those numbered 201 and above are planned for graduate credit and may in certain instances be taken by qualified undergraduate students.

The number of semester hours credit given for the satisfactory completion of a course is indicated in parentheses after the name of the course. Thus, a year course giving three hours of credit each semester is marked (3-3), and a semester course giving three hours credit is marked (3). A semester hour consists of the completion of one fifty-minute period a week of class work or laboratory work for one semester.

Courses offered in other colleges, schools, and divisions of the University, are described in the "Courses of Instruction" catalogue. Students are referred to that catalogue for information on courses in Mathematics, Physics, Chemistry, the Humanities and Social Sciences, and other subjects of interest.

### APPLIED SCIENCE

#### *Undergraduate*

#### **3 Graphical Communication (3)**

Principles and methods of graphical communication, sketching, schematic diagrams, nomographs, charts and graphs, elements of descriptive geometry, spatial representation.

#### **4 Logic and Method in Analysis (3)**

Logic, methods of investigation and reasoning, hypothesis, inference, probability. Analysis in the physical sciences and engineering.

- 5-6 **Finite Mathematics and Statistics in Science I-II (3-3)**  
Statements, sets and functions, numbers systems, probability theory, linear algebra, convex sets, finite chains, basic statistical principles and methods, applications.
- 7 **Science, Civilization, and Technology (2)**  
Interrelation between growth of science, progress of civilization, and expansion of technology; historical review of research of planetary systems; factors controlling atmospheric and space flight and planetary launchings; tracking and communication; space science and applications; space program and national policy. Emphasis is on basic factors for understanding of impact of science and technology on social, political, economic growth of U.S. society and culture.
- 10 **General Field Theory (3)**  
General theory of fields, Laplace and Maxwell equations, conformal mapping, particle motion in fields, potential.
- 11 **General Wave Theory (3)**  
Basic wave mechanics; wave equations.
- 12 **Electromagnetic Wave Theory (3)**  
Electromagnetic waves in bounded media, radiation, resonators, guides, microwaves.
- 29-30 **General Network Theory I-II (3-3)**  
Network theorems and functions, Laplace transform, Fourier integral, linear and nonlinear circuits, stability, matrices, domains.
- 32 **Network Analysis (3)**  
Solutions of equations using transformation calculus, poles and zeroes of network functions, correlation of domains, matrix representation, nonlinear circuit analysis.
- 50 **Information Theory (3)**  
Basic concepts in information theory, transmission of information, modulation systems, periodic sampling and pulse modulation, noise in transmission systems.
- 55 **Control Theory (3)**  
Theory of automatic control systems, steady-state and transient analysis, transfer functions, stability criteria.
- 58 **Analysis Methods (3)**  
Methods for analyzing problems; use of fundamental principles of mathematics, science, and engineering in problem analysis.
- 59-60 **Introductory Analytical Mechanics I-II (5-5)**  
Introduction to vector mechanics; statics and dynamics of particles, solids, and fluids; kinematics; behavior of solids and fluids acted upon by forces; Newton's Laws; concepts of stress and strain, with applications.
- 62 **Soil Mechanics (3)**  
Engineering properties of soils, lateral earth pressure, bearing capacity, foundation displacements, slope stability.
- 63-64 **Fluid Mechanics I-II (3-3)**  
Characteristics and properties of fluids; basic laws of fluid motion; phenomenological laws; mathematical description of incompressible and compressible flows; concepts of potential, stream function, circulation, lift, drag; elements of boundary layer theory, turbulence, dimensional analysis; laboratory demonstrations and projects.
- 65-66 **System Dynamics I-II (3-3)**  
Dynamics of linear systems, analogies, transient and steady-state analysis, Lagrange's equations, Hamilton's principle, introduction to gyroynamics.



- 67 **Analytical Kinematics (3)**  
Theoretical study of the motion of constrained and unconstrained rigid bodies.
- 70 **Earth Science (3)**  
Formation of and properties of soils and rock, climatology, hydrology, ground water and river flow, seismology.
- 71-72 **Mechanics of Deformable Solids I-II (3-3)**  
Introduction to the theories of elasticity, plasticity, and viscoelasticity; with applications in solid mechanics.
- 80 **Introductory Astronomy (3)**  
Coordinate systems and nomenclature, description of astronomic systems, stars, stellar physics, elementary celestial mechanics.
- 85 **Thermodynamics (5)**  
Theoretical study of fundamental concepts, first and second laws, equations of state, entropy, phase mixtures, kinetic theory, transport phenomena, partition functions, and statistical thermodynamics.
- 86 **Energy Conversion (3)**  
Concepts of thermodynamics pertaining to energy conversion. Study of cycles and entropy in energy conversion; solid state phenomena involved in conversion processes; energy forms, equations of state, and energy fields. Conversion methods using thermal cycles, thermoelectric devices, thermionic devices, magnetohydrodynamic generators, fuel cells, and photoelectric principles. Introduction to electromechanical energy converters and transducers. The concept of efficiency and losses in these systems.
- 87 **Heat Transfer Theory (3)**  
Theoretical concepts of conduction, convection, radiation; field and potential theory applied to conduction.
- 99 **Intermediate Comprehensive Evaluation (0)**  
Required of all students at the completion of the Introductory Level and prior to admission to the Intermediate Level. No academic credit; no fee.
- 101-2 **Materials Science I-II (4-4)**  
Structure and properties of materials; mechanical behavior of solids. The atom, bonding, crystal structure, noncrystalline solids, phases, micro- and macro-structure, mechanical properties of solids, relation of structure to behavior, tests. Thermodynamics and kinetics of solids; electrical and magnetic properties. Thermodynamic analysis, reaction rates, diffusion, nucleation and growth, control of structure and properties, response to environment. Conduction, electrical and magnetic phenomena and their relation to structure, domain behavior, structure, insensitive properties.
- 105-6 **Fundamentals of Measurement Science I-II (4-4)**  
Standards; measurements; error, accuracy, and precision; design of experiments.
- 107 **Statistics in Metrology (3)**  
Qualitative and quantitative aspects of measurement, statistical methods, uncertainty and accuracy, corrections, sampling.
- 110 **Management Analysis (3)**  
Emphasis on basic principles of management, forms of organization, standards used and the economics of industrial enterprise, management communications, management decision making.
- 111 **Operations Research (3)**  
General decision-making aspects of operations research (OR). History and characteristics of OR; construction of mathematical

models; the economic context of OR; forecasting; factors in decision making; decisions and their criteria under certainty, uncertainty, and competition.

- 112 **Quantitative Techniques (3)**  
Operational methods and models for selected classes of problems, both deterministic and stochastic. Linear programs, inventory, replacement, and waiting-line problems are considered.
- 121-22 **Structural Theory I-II (4-4)**  
Theory and analysis of behavior of structures, model analysis, numerical methods, matrix algebra methods, collapse methods.
- 130 **Electrical Energy Conversion (3)**  
Fundamentals of electromechanical energy conversion, concepts of efficiency and losses, development of the equations of an ideal generalized machine from both the circuit theory and field theory approach, the generalized machine as a d-c machine and various a-c machines, 3-phase machines and electrical power systems.
- 175 **Digital Circuitry and Systems (3)**  
Basic concepts of digital programmed computers, flow and control of information in the computer, number systems, coding and counting in digital computers. Introduction to logical design of combination and sequential logic circuits. The logic of arithmetic, central, memory, and input-output units. Study of typical binary and decimal digital computers. This is an advanced undergraduate course which may be taken for graduate credit.
- 180 **Measurement and Electronic Instrumentation \* (3)**  
Principles of measurements using electronic equipment and instrumentation. Introduction to the fundamentals of electrical measurements. Use of electrical equipment to measure voltage, current, impedance, frequency, power, waveform, and time. Limitations of the equipment used in these measurements. Analysis of electronic systems for precise measurement. This course is designed for scientific personnel who have need for a knowledge of electronic measurements but have not had a formal course in electronics, and requires only elementary college physics and mathematics as preparation.

#### *Graduate*

- 201 **Automatic Control (3)**  
Advanced theory of automatic control. Systems analysis, multiple loop systems, nonlinear systems.
- 211 **Mathematical Methods of Applied Science I (3)**  
Methods and theory of functions of complex variables and partial differential equations and their application. (May be taken concurrently with Ap S 212.)
- 212 **Mathematical Methods of Applied Science II (3)**  
Methods and theory of tensor analysis, calculus of variations, and integral equations and their application. (May be taken concurrently with Ap S 211.)
- 216 **Advanced Dynamics (3)**  
Dynamics of continuous mechanical systems; Lagrange's equations, Hamilton's principle, gyro dynamics; operational methods.
- 217 **Analytical Mechanics (3)**  
Fundamental principles, generalized coordinates, variational principles and Lagrange's equations, nonholonomic systems, Hamilton's equations, theory of small oscillations.
- 218 **Mechanics of Orbits and Trajectories (3)**  
Celestial mechanics. Orbits and trajectories in force fields. Dynamics of space vehicles.

\* No credit toward degree requirements for students in the School of Engineering and Applied Science.



- 219 **Mechanics of Continua (3)**  
Mechanics of elastic, plastic, and viscous solids, and of fluids; introduction to theory and formulation of basic equations.
- 220 **Nonlinear Mechanics (3)**  
Topological and analytical methods in nonlinear mechanics, nonlinear resonance, relaxation oscillations.
- 221 **Theory of Elasticity I (3)**  
Introduction to mathematical theory of elasticity, analysis of strain and stress, generalized Hooke's law, equilibrium equations. Beltrami-Mitchell equations, strain energy functions, torsion, general flexure.
- 222 **Theory of Elasticity II (3)**  
First and second boundary-value problems in plane elasticity, uniqueness of solutions, simply and multiply connected regions, three-dimensional problems, thermoelasticity, vibration of elastic solids, variational methods.
- 223 **Celestial Mechanics (3)**  
General equations of motion, Lagrange's planetary equations, disturbing function, Delaunay and Poincaré variables, secular inequalities, lunar theory, precession and nutation.
- 227 **Experimental Stress Analysis (3)**  
Applications of the theory of elasticity in the analysis of strain and stress; theory and problems in measurement of static and dynamic strains; measurement of force, acceleration, and velocity.
- 228 **Photoelasticity and Photoplasticity (3)**  
Theory and problems in two- and three-dimensional photoelasticity; photoplasticity.
- 231-32 **Fluid Dynamics I-II (3-3)**  
Physical principles of fluid motion; including conservation laws, characteristics and properties of fluids. Navier-Stokes equations and some solutions; Prandtl-Taylor hypothesis and boundary layer theory, turbulence; compressible flow, including variable area, friction and heating effects, normal and oblique shock, sub-, trans-, and supersonic velocities.
- 233 **Problems in Applied Science (3)**  
Investigation of problems in engineering and applied science, emphasizing imaginative and systematic application of fundamental principles in engineering, physics, and mathematics.
- 241 **Science of Materials (3)**  
Structure as related to mechanical, magnetic, and electrical properties; dislocation theory; strengthening mechanisms in solids. Applied experimental procedures in X-ray diffraction, micro-radiography, transmission electron microscopy. Lecture and laboratory.
- 242 **Magnetohydrodynamics (3)**  
Study of the interaction of electromagnetic and fluid fields. Dynamics of conducting fluids in electromagnetic and magnetic fields.
- 250 **Theory of Plane Structures (3)**  
Classical and modern methods of analysis of statically indeterminate structures, including matrix analysis, theory of plastic collapse.
- 251 **Nonlinear Theory of Structures (3)**  
Causes of nonlinear structural behavior; analysis of beams, trusses, and rigid frames; deflection theory for arches and suspension bridges.



- 252 **Theory of Structural Dynamics (3)**  
Analysis of elastic structures under various dynamic loadings, both steady-state and transient, including vibrations of rigid frames, plates, and thin shells.
- 253 **Theory of Space Structures (3)**  
Displacement and force methods of analysis of statically indeterminate structures; including matrix analysis, membrane and bending theories for thin shells.
- 259 **Nonlinear Mechanics of Continua (3)**  
Development of fundamental concepts of nonlinear media and their applications.
- 260 **Theory of Plates and Shells (3)**  
Classical and modern theories of plates and shells, plates and cylindrical shells under different loadings and boundary conditions, equations for plates including shear, rotationally symmetric shells under small deformations, and their applications.
- 261 **Theory of Plasticity (3)**  
Introduction to mathematical theory of plasticity; tensor invariants, theory of conditions of compatibility, constitutive equations, characteristic surfaces for perfectly plastic solids; applications.
- 262 **Theory of Elastic Stability (3)**  
Beam-column problems and methods of analysis (including numerical analysis); lateral buckling of beams; buckling of rigid frames, arches, plates, stiffened plates, and shells; inelastic buckling.
- 263 **Field Analysis and Potential Theory (3)**  
A general study of the theory of potentials including those used to facilitate the solution of problems in electromagnetic theory, mechanics, thermodynamics, and gravitation.
- 264 **Electrodynamics (3)**  
Presence of moving matter in electromagnetic fields, force and energy in moving systems, relativistic concepts, tensors.
- 265 **Electromagnetic Waves (3)**  
Electromagnetic waves in bounded media, radiation from antennas, high-frequency transmission lines, cavity resonators, and microwave devices.
- 266 **Electromagnetic Wave Propagation (3)**  
Ground waves; space-wave propagation, atmospheric effects, ionosphere; maximum usable frequency; bandwidth.
- 267-68 **Network Analysis and Synthesis I-II (3-3)**  
Network theorems; geometry of networks; network functions; positive real functions; reliability conditions of network functions; synthesis of driving-point functions; synthesis of transfer functions; filter design; the approximation problem.
- 270 **General Network Analysis (3)**  
Solutions of linear integro-differential equations using transformation calculus. Laplace transforms, Fourier integral, poles and zeroes of network functions, correlation of time and frequency domains, elements of network synthesis.
- 271 **Active Network Theory (3)**  
Analysis of three-terminal networks; matrix representation; reciprocity; stability; passivity-activity; feedback; oscillators. Unified theory for all linear three-terminal networks, including vacuum tube and transistor circuits.
- 274 **Analysis of Modulation and Noise (3)**  
Analysis of Fourier series and integrals of signals and linear

networks, modulation and spectra, noise analysis including probability method of determining power spectra.

- 275 **Physical Electronics (3)**  
Physical principles underlying operation of various electronic devices including vacuum tubes, electron lenses, transistors, and recent solid-state electronic devices.
- 280 **Thermodynamics (3)**  
Critical study of first and second laws; ideal and van der Waal gases; kinetic theory and thermochemistry; introduction to statistical thermodynamics and third law.
- 281 **Heat Transfer (3)**  
Physical and mathematical concepts of heat transfer phenomena under steady and unsteady conditions, including: Stefan-Boltzmann and Planck laws for radiation, Fourier heat equation for conduction, dimensional analysis, and boundary layer theory for convection.
- 282 **Gas Dynamics (3)**  
Theory of gas dynamics including: combustion, shock phenomena, dynamics of flow, and heat transfer for high temperature gases.
- 283 **Hypersonic Fluid Dynamics (3)**  
Small disturbance theory, Newtonian theory, constant-density solutions, thin shock layers, viscous interactions, free molecule and rarefied gas flows.
- 284 **Combustion Processes (3)**  
Thermodynamics of combustion, chemical kinetics, flame propagation, combustion of liquids and solids, detonation processes.
- 285 **Reaction Kinetics (3)**  
Theoretical aspects of kinetics of homogeneous and heterogeneous reactions in gaseous and liquid systems.
- 286 **Information Theory (3)**  
Discrete and continuous systems, ergodic ensembles and random processes; correlations, filtering, prediction; redundancy.
- 287 **Automata and Self-organizing Systems (3)**  
Effectively computable functions and Turing machines, digital computational methods in Boolean algebra, combinational circuits and their analysis, recursion circuits and their analysis, reliability of automata, networks of automata, artificial intelligence.
- 298 **Research (1 to 3)**  
Research as arranged.
- 299-300 **Thesis (3-3)**

## ENGINEERING

### *Undergraduate*

- 1 **Engineering Planning and Economics (3)**  
Analysis, planning, and economics of engineering projects using mathematical and modern computational methods.
- 2 **Regional and Urban Planning (3)**  
Engineering aspects of regional and urban planning, including: transportation, water supply and sewerage, public safety and convenience, utilities, and natural resources.
- 10 **Hydraulic Engineering (3)**  
Hydraulic system design; including pipe networks, river and channel flow; drainage and irrigation, water supply, and sewerage.



- 11-12 **Structural Design I-II (5-5)**  
Concepts of structural design, elastic design and ultimate strength design of reinforced and prestressed concrete structures, elastic and plastic design of metal structures, individual design problems.
- 15 **Structural Dynamics (3)**  
Analysis and design of structures under vibration, earthquake, blast, and other dynamic loading; energy methods; applications of matrix algebra.
- 19-20 **Engineering Electronics I-II (3-3)**  
Analysis and design of: vacuum tube and solid state devices; voltage and power amplifiers; feedback amplifiers; oscillators; equivalent, relaxation, and computing circuits.
- 21 **Application of Computers to Engineering Problems (3)**  
Machine utilization; number systems; principles of programming, machine language and automatic programming language, Fortran, Algol, Cobol; numerical analysis; basic logical circuits.
- 23-24 **Computer Laboratory I-II (3-3)**  
Use of digital and analog computers; including design, logical circuitry, programming, operation, maintenance, and troubleshooting.
- 31-32 **Thermal Power I-II (3-3)**  
Analysis and design of system components in heat-power, gas and vapor turbine, internal combustion engine, heat pump, and nuclear power systems, including aspects of engineering economy.
- 35 **Fluid Machinery (3)**  
Theory and design of fluid machines; including turbomachinery, torque converters and couplings, and jet machines. Laboratory projects.
- 49-50 **Precise Electrical Measurements I-II (3-3)**  
Electrical measurements, from direct current through radio frequencies; techniques; detectors; bridges; measurement of current, voltage, power, resistance, capacitance, inductance, energy, phase angle, frequency and time; dielectric and magnetic measurements; topics in high-frequency measurement including field strength, signal-to-noise ratio, impedance, attenuation.
- 52 **Introductory Transducers and Instrumentation (3)**  
Theory, design, and application of simple transducers; design of instrumentation of one-type systems; analysis and design of simple transducer instrumentation.
- 53 **Advanced Transducers and Instrumentation (3)**  
Analysis and design of transducers and instrumentation for measurement in systems containing multiple quantities of one type or mixtures of types.
- 54 **Precise Mechanical Measurements (4)**  
Techniques for precise measurement of mass, time, weight, density, force, pressure, vibration, acceleration, flow, and viscosity.
- 55 **Precise Heat Measurements (4)**  
Temperature scales; measurement by resistance thermometry, thermocouples, pyrometry, vapor pressure, thermometry; heat transfer quantities and their measurement; calorimeters, flow calorimeters.
- 56 **Pressure Measurements (3)**  
Experimental techniques for quantitative measurement of pressure; working gages, standards, calibration procedures; methods and apparatus for observations near atmospheric pressure, in the high pressure range, and in the vacuum range.



- 101-2 **Communications Laboratory I-II (3-3)**  
Analysis and design of solutions to problems in communications and information.
- 103-4 **Control Laboratory I-II (3-3)**  
Analysis and design of electrical, mechanical, pneumatic, hydraulic, and combined control systems.
- 105-6 **Electrical Engineering Laboratory I-II (3-3)**  
Design projects involving electrical and electromechanical devices and systems.
- 107-8 **Electronics Laboratory I-II (3-3)**  
Design projects involving electronic devices and instrumentation.
- 109-10 **Energy Conversion Laboratory I-II (3-3)**  
Analysis and design of solutions to problems in converting energy states and forms.
- 111-12 **Mechanical Engineering Laboratory I-II (3-3)**  
Design projects involving mechanical, fluid thermal, thermomechanical, and electromechanical devices.
- 115 **Reactor Engineering (3)**  
Reaction physics; types of reactors; moderators, control methods, pile design; reactor kinematics; design problems.
- 122 **Digital Techniques (3)**  
Analysis and logical design of combinational and sequential digital circuits. Minimization techniques of multi-output circuits. Electronic realization of logical circuits using diodes, transistors, magnetic cores, tunnel diodes, cyrotrons, and other electronic devices. Study of digital systems by the use of timing diagrams, state diagrams, logical block diagrams, logical equations, and transition matrices. Analog-to-digital converters. Design of a small scale computer. This is an advanced undergraduate course which may be taken for graduate credit.
- 199 **Engineering Research (1 to 3)**  
Undergraduate research projects as approved by the Faculty, with Dean's permission. (Credit is assigned in relation to the work undertaken.)

## *Graduate*

- 201 **Metal Structures (3)**  
Structural behavior and failure of metal structures, materials, residual stresses, analysis and design of connections and members, theory of plastic collapse of structures, plastic design.
- 202 **Ultimate Strength of Reinforced Concrete Structures (3)**  
Modes of failure of reinforced concrete structures; experimental data on failure; ultimate strength concepts for the analysis of beams, slabs, and columns.
- 203 **Prestressed Concrete Structures (3)**  
Structural behavior and failure of prestressed concrete structures; materials; theory, analysis, and design of prestressed concrete structures and members.
- 204 **Geotechnics in Soil Mechanics (3)**  
Dynamic geology in the formation and properties of soils; Boussinesq and Westergaard equations for stresses and deformations in soil masses; analysis of settlement; flow of water in soils; solutions of Laplace-type equations for seepage involving foundations, earth dams, and wells; theory of frost action.
- 205 **Theoretical Soil Mechanics (3)**  
Theories of soil strength and conditions for failure, bearing capacity of footings, pile foundations, theories of lateral earth pressure, stability of slopes, soil dynamics.

- 206 **Foundation Engineering (3)**  
Principles of soil mechanics and structural mechanics in the analysis and design of spread footings, mat and pile foundations, retaining walls, sheet piling and water front structures.
- 211 **Experimental Structural Analysis (3)**  
Experimental analysis of truss, rigid frame, plate, and shell structures; large- and small-deflection models; similitude.
- 212 **Concepts of Structural Design (3)**  
Advanced seminar relating theoretical and experimental knowledge to the problems of function, form, mechanical behavior, failure, and analysis of structures.
- 220 **High-frequency Electronics (3)**  
High frequency operation of electron tubes and semiconductor devices, transit time, bunching, pulse techniques.
- 221 **Industrial Electronics (3)**  
Gaseous tubes and applications; rectifiers; timing circuits; induction and dielectric heating; regulation and control, magnetic amplifiers.
- 222 **Electronic Measurements in Medicine (3)**  
Theory of measurements in biological areas, field and circuit theory as a foundation for measurements, techniques for electronic measurements on biological specimens, problems in medicine and psychology with emphasis on measurements and measuring devices.
- 223 **Physical Basis for Medical Electronics (3)**  
Electrical and acoustical properties of biological material; structural components of biological material as they affect its dielectric and acoustical behavior, electrical relaxation phenomena in general and their application to biological material in particular, applications in diathermy and electrocardiography, impedance determination.
- 232 **Digital Systems (3)**  
The programmed system; system design of digital computers, special-purpose digital computers, reliability, data-processing techniques, analog-to-digital and digital-to-analog techniques.
- 233 **Microwaves (3)**  
Transmission lines; waveguides; antennas; resonators; amplifiers and oscillators; klystrons, magnetrons, traveling wave tubes.
- 234 **Antennas (3)**  
Maxwell's equations, radiation, impedance, directional characteristics, arrays, aperture antennas.
- 235 **Communication Systems (3)**  
Radar, television; ultrahigh frequency systems; navigational aids.
- 240 **Power Transmission (3)**  
Transmission lines, exact and approximate equivalent circuits, standing waves, filtering, protection, radio interference, high voltage, line configurations.
- 241 **Power Generation (3)**  
Steam, hydroelectric, and nuclear plants; fuel cells; magneto-hydrodynamics; efficiency; reheat cycles; stability; load factors; generator swings.
- 242 **Power Systems (3)**  
Substations, transformers, distribution networks, short and open circuit analysis, symmetrical components, stability, network analyzers.



- 270 **Advanced General Metrology (3)**  
Topics in the conceptual, physical, and mathematical aspects of measurement, standards, design for precision measurement, and measurement at extreme values.
- 271-72 **Probability and Statistics of Metrology I-II (3-3)**  
Probability distributions, discrete and continuous distributions; sampling; combinatorial analysis; stochastic processes; conditional probability; correlation; analysis of variance; design and analysis of experiments, Latin Square experiments, factorial experiments, block and lattice design.
- 273 **Microwave Measurements (3)**  
Measurement of power, frequency, impedance, wavelength, and attenuation at microwave frequencies. Characteristics and Q of resonant devices.
- 274 **Precise Optical Measurements (3)**  
Optical constants of lens systems; aberration; resolving power; illumination in focal plane; image evaluation, magnification, index of refraction; color and color temperature.
- 298 **Research (1 to 3)**  
Research as arranged.
- 299-300 **Thesis (3-3)**

## **ENGINEERING ADMINISTRATION**

## *Graduate*

- 204 **Administration of Engineering Contracts (3)**  
Study of types of contracts, proposal preparation, evaluating contracts, negotiation, contract extension policies and procedures, appraisal of capabilities of contractors.
- 207 **Personnel Administration (3)**  
Study of personnel functions with emphasis on relationships within organizations which utilize the services of engineers and scientists: employment, health, safety, education and training, financial compensation, union relations, collateral benefits and services, human relations and personnel research practices in engineering and industry.
- 210 **Engineering Law (3)**  
Legal principles and procedures of interest to engineers, the American Legal System, contracts and specifications, liability of professional engineers, antitrust problems, agency relationships, negotiable instruments, patent and proprietary rights, special problems in research and developmental contracts.
- 211 **Engineering Administration I (3)**  
Planning and scientific method in administration. Characteristics of plans; establishment of objectives and goals; forecasting future conditions; determining policies, methods, and procedures; organizing for planning; testing of plans. Decision making; problem solving; factors in decisions, problem formulation, model building, testing and solving, testing and control of solutions.
- 212 **Engineering Administration II (3)**  
The (1) organizing, (2) directing or leading, and (3) controlling elements of the administrative process. Characteristics of organization, departmentization, authority, responsibility, levels of specialization, coordination, decentralization, staff, committees, delegation, personnel management, executive leadership, communication; implications of automation; systems analysis for



effective administration. Principles and methods for evaluation and control of operations.

**213 Engineering Administration III (3)**

(Sequential to EA 211 and EA 212)

Application of principles of administration and scientific method in solving case problems.

**253 Management of Production Processes and Facilities (3)**

Planning, organizing, and control of production; forecasting techniques; material management; methods of loading and scheduling production processes; electronic methods in production control. Organization and administration of the plant engineering function with emphasis on maintenance control programs.

**254 Principles and Procedures of Automatic Data Processing Systems (3)**

Logic of computers, arithmetic and control units, systems analysis for data processing applications, systems design, systems economics, relation to scientific decision processes.

**255 Administration of Research and Development (3)**

Contemporary practices of administrators of scientific and engineering research and development for the purpose of finding uniformities, characteristics, and conceptual schemes; relation of such findings to accepted managerial concepts, and projection of their implications on contemporary managerial hierarchies and organizational structures.

**261 Economic Analysis in Engineering Planning (3)**

Important concepts and theories employed in economic analysis of engineering projects. Application of tools and techniques used in various analytical processes. Detailed practice in pursuit of solutions to, and adjustment of, persistent and current problems in this field.

**263 Quantitative Techniques of Engineering Administration (3)**

Application of the various quantitative techniques, mathematical, statistical, and other management sciences' techniques to the analysis of engineering administration and the solution of administrative problems by the use of models, theories, and measurements.

**271 Operations Research (3)**

Background and application of operations research; history, characteristics, capabilities, administrative considerations, methods and techniques, including construction of conceptual and mathematical models.

**272 Problems in Operations Research (3)**

Field experience in operations research on a team basis. Each small group locates an actual problem and formulates and solves it by operations research models. Class evaluation of progress.

**275 Linear Programming (3)**

The basic computational, theoretical, and applied areas with emphasis on the general linear programming problems; simplex computational procedure; duality; transportation and assignment problems; production scheduling problem; zero-sum two-person games; applications and recent developments.

**276 Theory of Games (3)**

Study of mathematical models with applications to the relationships among independent competitive entities (persons or organizations in environment of competition, bargaining, bidding), selection of optimum strategies, mixed strategies, minimax concept, connections with linear programming and decision functions, two-person and n-person zero and nonzero sum games.

277 **Queuing Theory (3)**

Study and analysis of operational systems with variables in arrivals and service, Monte Carlo analysis, optimization methods.

285 **Seminar in Administrative Problems (3)**

Individual analysis of complex administrative problems, with group evaluation and discussion. Prerequisite: admission to candidacy and completion of at least 18 semester hours of graduate study.

298 **Research in Engineering Administration (arr.)**

Application of established principles to new engineering administrative situations; the development of new knowledge of administration. Creative thinking in engineering administration, initiation of new theories and principles, development of new hypotheses, experimentation, proof of theories and hypotheses.

299-300 **Thesis (3-3)**



Thermodynamics

## ALUMNI AND ALLIED ASSOCIATIONS

### THE GENERAL ALUMNI ASSOCIATION

The objectives of this Association are to unite the graduates who wish to associate themselves for charitable, educational, literary, and scientific purposes, and to promote the general welfare of the University.

Eligible members are those who have matriculated in any school of the University and who have left the University in good standing, or any person who is or has been a member of the teaching, research, or administrative staff of the University, or of the Board of Trustees of the University. Active members are those eligible members who are current contributors (dues or otherwise) to or life members of The George Washington University General Alumni Association, the Alumni Association of any school of the University, or contributors to the Alumni Support Program.

The Alumni Office is in Bacon Hall, 2000 H Street NW., Washington, D.C. 20006.

All alumni are urged to keep the Alumni Office informed of changes of address or occupation and to supply information with regard to their fellow alumni.

### THE ENGINEER ALUMNI ASSOCIATION OF THE GEORGE WASHINGTON UNIVERSITY, INC.

The Engineer Alumni Association was organized in 1936 and was incorporated in 1962. It has worked closely with the General Alumni Association since its organization. Its objects are to unite the graduates and Faculty of the School of Engineering and Applied Science in closer fellowship, to promote the general welfare of the School of Engineering and Applied Science and of the University at large, to foster activities of the engineering organizations recognized by the University, and to advance the profession of engineering in general.

*Officers of the Association for  
the year 1964-65*

*President*, Erling R. Jacobsen, B.E.E. 1963

*Vice President*, Laurence R. Brown, B.S. in Eng. 1949

*Vice President*, Derrill C. Rohlf, B.E.E. 1955, M.S. in Eng. 1959

*Secretary*, Dulaney F. deButts III, B.C.E. 1962

*Treasurer*, Douglas L. Jones, B.M.E. 1963



## THE UNIVERSITY

### HISTORY AND ORGANIZATION

The George Washington University had its beginning in 1821 as The Columbian College in the District of Columbia. The name of the institution was changed in 1873 to Columbian University and in 1904 to The George Washington University. The debt of the University to George Washington whose name it bears is an intangible one.

George Washington, as President and as private citizen, had urgently insisted upon the establishment of a National University in the Federal City. There he hoped that, while being instructed in the arts and sciences, students from all parts of the country would acquire the habits of good citizenship, throwing off local prejudices and gaining at first hand a knowledge of the practice, as well as the theory, of republican government. To further the materialization of his hopes, Washington left a bequest of fifty shares of The Potomac Company "towards the endowment of a University to be established within the limits of the District of Columbia, under the auspices of the General Government, if that government should incline to extend a fostering hand towards it." The Congress never extended "a fostering hand." The Potomac Company passed out of existence, and Washington's bequest became worthless.

Fully conscious of Washington's hopes, but motivated primarily by a great missionary urge and the need for a learned clergy, a group of dedicated ministers and laymen sponsored a movement for the establishment of a college in the District of Columbia. Inspired largely by the zeal and energy of the Reverend Luther Rice, they raised funds for the purchase of a site and petitioned Congress for a charter. After much delay and amendment, Congress granted a charter which was approved by President Monroe on February 9, 1821. To safeguard the College's nonsectarian character it provided "That persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College, or denied any of the privileges, immunities, or advantages therefore, for or on account of his sentiments in matters of religion."

During the entire time when the institution was known as Columbian

College, its activities were centered on College Hill, a tract of forty-six and a half acres between the present Fourteenth and Fifteenth Streets extending north from Florida Avenue to somewhat beyond Columbia Road. The Medical School was located downtown. For the better part of the Columbian University period, the buildings of the University were situated along H Street between Thirteenth and Fifteenth Streets. The Medical School group still remains there.

During the last half century the University's present plan has been developed in that section of the old First Ward familiarly known as "Foggy Bottom," between Nineteenth and Twenty-fourth Streets, south of Pennsylvania Avenue. Within a few squares are the White House, the Department of the Interior, the State Department, the World Bank, and many other governmental offices and international agencies. The area is not without its reminders of historic interest to the University. President Monroe who signed the Charter lived at 2017 Eye Street. The first President of the Board of Trustees, the Reverend Obadiah B. Brown, was for fifty years the pastor of a church at Nineteenth and Eye Streets, and Washington selected Twenty-third and E Streets as the site of the National University he had hoped to see established.

The University as it is now organized consists of Columbian College of Arts and Sciences, which offers work leading to Associate's, Bachelor's, and Master's degrees; the Graduate Council, which offers work leading to the degree of Doctor of Philosophy; the professional schools, which include Medicine; Law; Engineering and Applied Science; Education; and Government, Business, and International Affairs; the College of General Studies; the Division of University Students; the Division of Air Science; and the Summer Sessions.

The George Washington University is privately endowed and is governed by a self-perpetuating Board of Trustees of which the president is an ex officio member.

### **THE LIBRARY**

The Library collections of the University are housed in the University Library and in the departmental libraries of law and medicine.

These collections contain approximately 386,500 volumes — 294,000 in the University Library, 65,000 in the Law Library, and 27,500 in the Medical Library. Approximately 10,000 volumes a year are added to the Library's resources. Endowments, supplementing the University appropriation, provide books in the fields of American civilization, American literature, foreign service, history, public finance, and the social sciences; and gifts from many sources have enriched the collections. The Libraries currently receive 2,600 periodicals.

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James Russell Wiggins, LL.D.  
\*John Johnston Wilson, LL.B.  
Watson W. Wise, Ph.B.  
\*James Otis Wright, B.S., LL.B.

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Charles Stanley White, M.D., Sc.D.  
Lloyd Bennett Wilson

\* Nominated by the alumni.



## OFFICERS OF ADMINISTRATION

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 John Anthony Brown, Jr., A.M., L.H.D., LL.D., *Vice President and Dean of Faculties*  
 Henry William Herzog, B.S., *Vice President and Treasurer*

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Harold Frederick Bright, Ph.D., *Associate Dean of Faculties*  
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 Sally Oleon Shames, Ed.M., Ph.D., *Assistant to the Vice President and Dean of Faculties*  
 Tamis Wilson Borden, A.B., *Administrative Secretary*

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 Humbert John Cantini, Jr., LL.B., *Assistant Treasurer*  
 Margaret Payne Greene, B.S., *Assistant Treasurer, Contract Research*  
 Maurice Kingsley Heartfield, Jr., A.B., *Assistant Treasurer*  
 John Collum Einbinder, A.B. in Govt., *Business Manager*

Blaine Richard Berg, M.S., *Director of Public Relations*  
 Paul Vernon Bissell, Ph.D., *Dean of Men; Director of Veterans Education*  
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 John Russell Mason, A.M., M.S. in L.S., *Librarian; Curator of Art*  
 Joseph Young Ruth, A.B., *Director of Admissions*  
 Joseph Richard Sizoo, A.M., D.D., Litt.D., LL.D., L.H.D., S.T.D., *Director of University Chapel*  
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 Stanley Tracy, LL.B., *Director of Alumni Relations*  
 Benjamin Douglass Van Evera, Ph.D., Sc.D., *Dean for Sponsored Research*  
 Wallace Edward Weems, Jr., A.B., *Director of Personnel Services*

*The School of Engineering and Applied Science* Martin Alexander Mason, Ing.-Dr., *Dean of the School of Engineering and Applied Science*  
 Nelson Thomas Grisamore, Ph.D., *Assistant Dean (Research) of the School of Engineering and Applied Science; Director, Center for Measurement Science*  
 Herbert Ernest Smith, C.E., Ph.D., *Assistant Dean (Academic) of the School of Engineering and Applied Science*

# THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE

## Faculty and Staff of Instruction\*

### EMERITI

- Benjamin Carpenter Cruickshanks, B.S. in M.E., *Professor Emeritus of Mechanical Engineering*  
Frederick Morris Feiker, B.S. in E.E., D.Eng., *Professor Emeritus of Engineering Administration*  
Jack Edward Walters, M.S. in M.E., Ph.D., *Professor Emeritus of Engineering Administration*

### ACTIVE

- Davinder Kumar Anand, M.S. in Eng., *Assistant Professor of Engineering and Applied Science*  
Galip Mehmet Arkilic, Ph.D., *Professor of Applied Science*  
Donald Baechler, M.S. in Eng., *Instructor (part-time) in Engineering*  
William Walter Balwanz, M.S. in E.E., *Assistant Professorial Lecturer in Engineering*  
Alfred Blumstein, Ph.D., *Associate Professorial Lecturer in Engineering Administration*  
Edward Howard Braun, A.M., *Assistant Professor of Engineering and Applied Science*  
Robert Wayne Bublitz, M.S. *Assistant Professorial Lecturer in Engineering Administration*  
Joseph Marion Cameron, M.S., *Instructor (part-time) in Engineering*  
Don Harvey Cook, M.S. in E.E., *Associate Professorial Lecturer in Applied Science*  
†Paul Arthur Crafton, Ph.D., *Professor of Engineering and Applied Science*  
Robert Emmet Cronin, M.S., *Associate Professor of Engineering and Applied Science*  
Robert Lyle Dedrick, Ph.D., *Associate Professor of Engineering and Applied Science*  
‡Louis de Pian, Ph.D., *Professor of Applied Science*

\* Professors, Adjunct Professors, Associate Professors, Assistant Professors, and Full-time Instructors constitute the Faculty. The President of the University, the Dean of Faculties, the Registrar of the University, and the Director of Admissions of the University are ex officio members of the Faculty. This listing of the Faculty and Staff of Instruction is for the academic year 1964-65.

† On sabbatical leave fall semester 1964-65.

‡ On sabbatical leave spring semester 1964-65.

Churchill Eisenhart, Ph.D., *Adjunct Professor of Applied Science*  
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